

MANUFACTURERS' RECORD

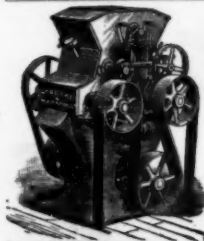
A Weekly Southern Industrial and Hardware Newspaper.

VOL. 9. No. 1.
WEEKLY.

BALTIMORE, FEBRUARY 13, 1886. 1000524

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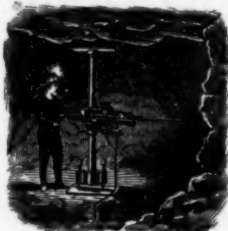
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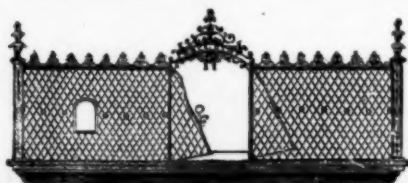
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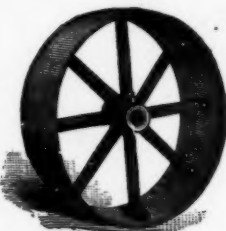
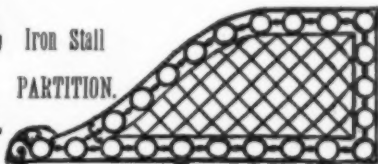


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The cost of this Mill is much less than any other machine of sufficient capacity to do the same amount of work.

It requires less power to run it, (10-horse being sufficient.)

The wear and tear of the Mill is much less than any other Quartz Mill doing the same amount of work, and the quality of the work done by it is greatly superior to work done in any other Quartz Mill now in use.

It crushes to a uniform fineness and makes no slimes, so that no sizing is required for concentration.

The Mill is equally well adapted to crushing and pulverizing of all classes of ores, either for amalgamation or concentration, and will pulverize and amalgamate from one-half to one ton per hour, according to character of ore and fineness of screens.

With ordinary care there is no loss of mercury by flouring, and consequent loss of gold, as in most other Mills where mercury is used in the Mill.

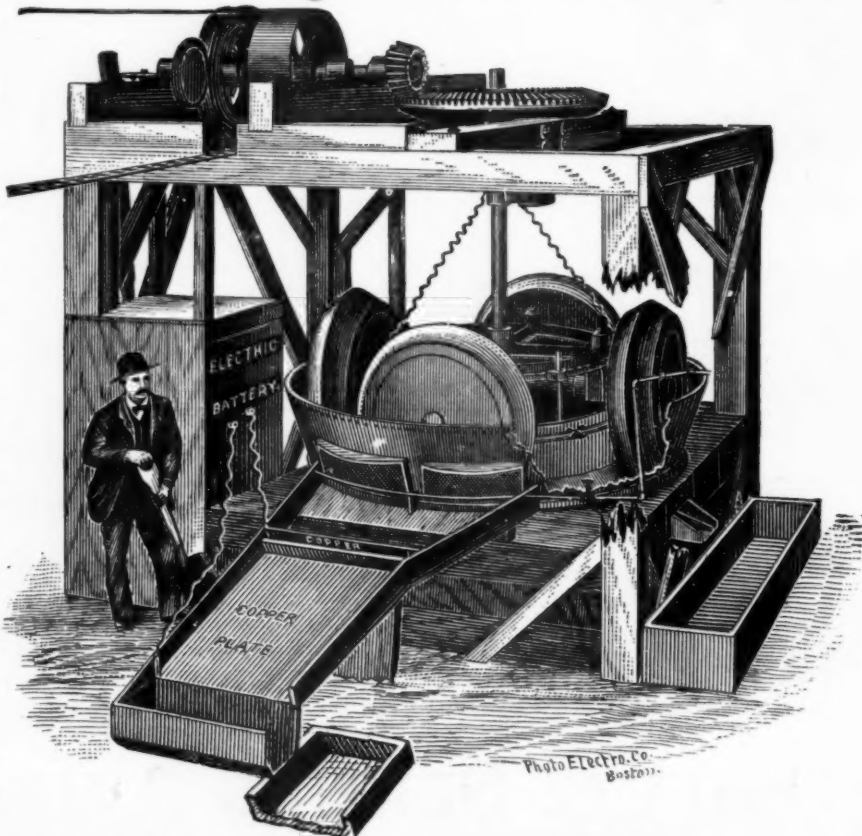
Amalgamation is carried on in the same operation with the crushing. The mercury is placed in the Mill in quantities varying from 10 to 40 pounds.

The application of electricity to the Mill for the purpose of cleaning and keeping the mercury alive has been to a very large extent superseded by the invention and introduction of the Mercury Trap in the Mill for the purpose of drawing off the mercury when charged with gold or on the slightest indication of flouring. By this ingenious device the mercury can be changed as often as desired without loss of time in either crushing or amalgamating. By opening this Trap the amalgam is discharged from the Mill in three minutes, and clean mercury introduced in its place.

To those familiar with running a Gold Mill this latter advantage will be greatly appreciated; in fact, it gives the mill-man full control of his work.

This Mill has been on exhibition at the foundry of Messrs. Bisbee & Endicott, at Chelsea, Mass., for the past 18 months, a good part of the time in active operation, and we have treated the most rebellious ores from many mining districts with most satisfactory results to the parties concerned.

The past year we have sold many Mills, which may be found in Michigan, North Carolina, Dakota, Montana, Idaho, Colorado, California, Mexico, Nova Scotia, etc. All those in operation are giving the most perfect satisfaction, as testimony will prove, and we will take pleasure in referring to any one of these on application.



We Furnish a Complete Mill for \$2,500, Delivered on Board Cars.

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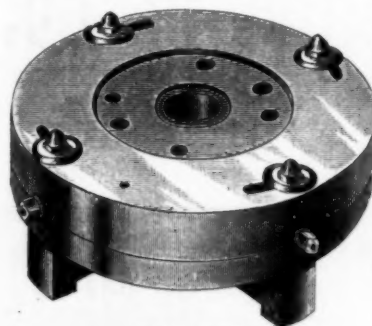
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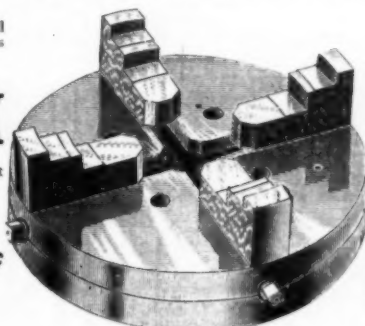


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This Chuck is constructed upon the same general principles as the well-known

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with the additional feature that it can be used either as an
**Independent,
Universal Concentric
or Eccentric.**



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Warranted to be the Strongest, Most Accurate, and Easily Operated Combination Chuck in the market.

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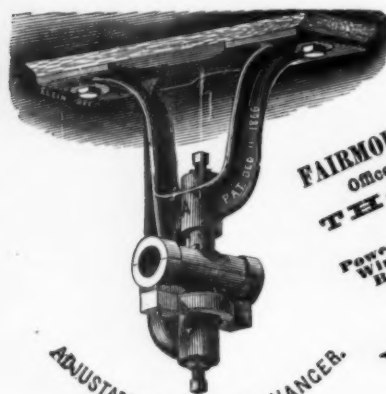
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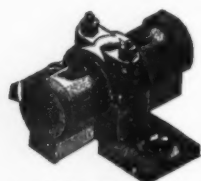
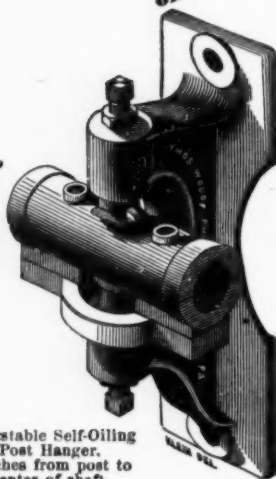
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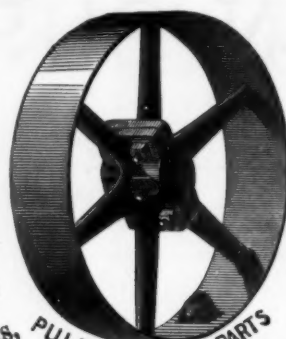
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WITH IMPROVED HECKS.

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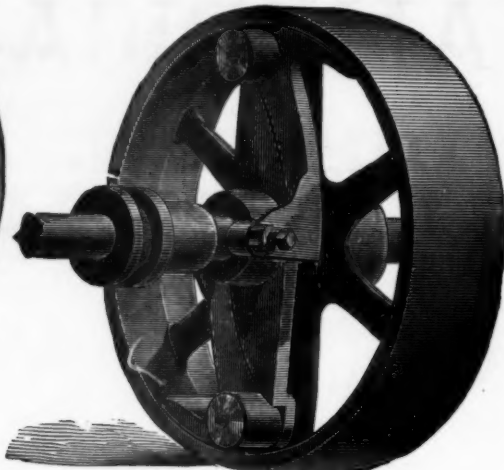
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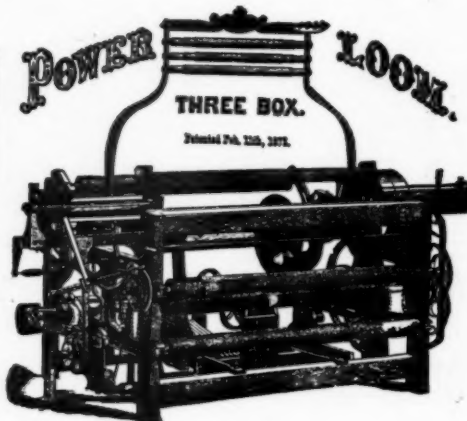
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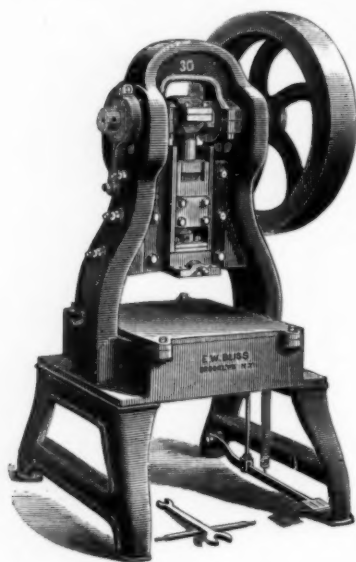
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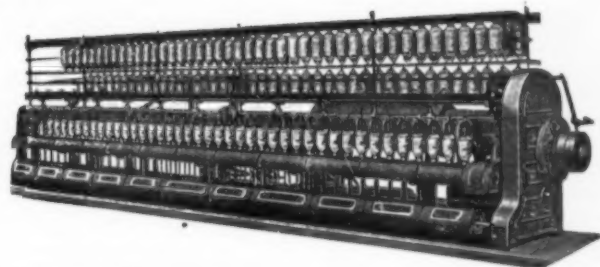
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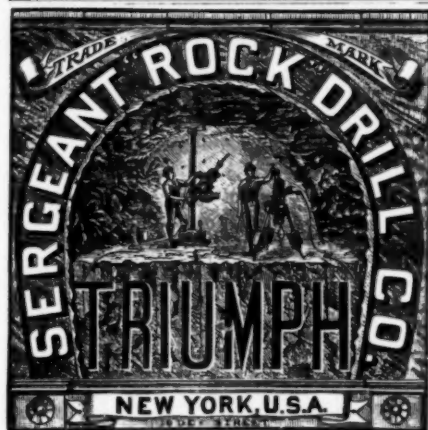
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GOLD MEDAL AWARDED NEW ORLEANS, 1885, FOR BEST RUNNING BELTS.

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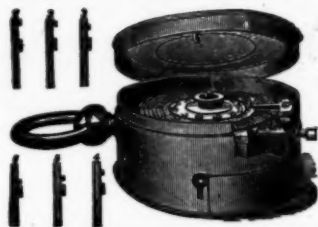
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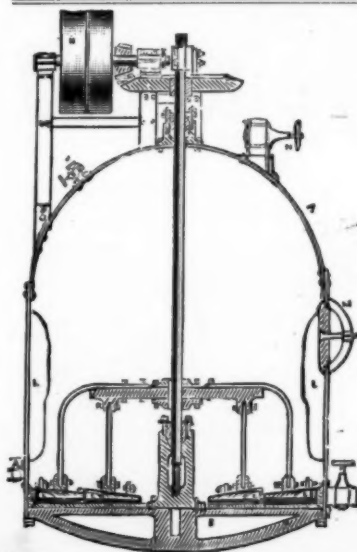
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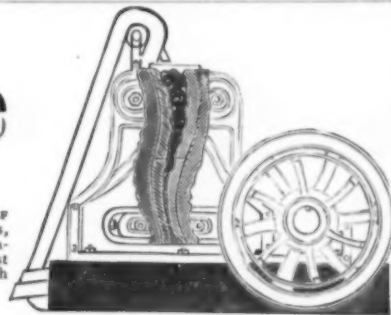
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Disintegrating Machine

The Only Method for Preparing the Ore for Amalgamation.

Disintegrating, Decomposing and Desulphurizing the ore under a HIGH TEMPERATURE and PRESSURE OF STEAM HEAT, with chemical action and attrition, dissolves and breaks up the chemical combination in the ore, individualizing, cleaning and separating the atoms of metal from the gangue, perfectly freeing them for amalgamation in combination with the MEECH AMALGAMATION MACHINE and process, (being the greatest combination of Amalgamation known,) will successfully extract 90 per cent. of the metal from rebellious ores, such as Sulphurets, Sulphates, Sulphides, Chlorides, Bromides, Oxides, Tellurides, &c.

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**THE MEECH CRUSHER & PULVERIZER.**

This Machine will CRUSH AND PULVERIZE GOLD AND SILVER ORES to 20, 40, and 60 mesh fine, and from 20, 40 and 60 tons per day. The principles of this machine, making it superior to all others, are the peculiar concave and convex shape of the jaws, with concave and convex projections, which breaks, crumbles, stamps and pulverizes the ore with less power, wear and tear, than any other machine. MANUFACTURED BY

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We will contract to erect the Meech Plant of Mining Machinery for successfully treating all grades of gold and silver ore.

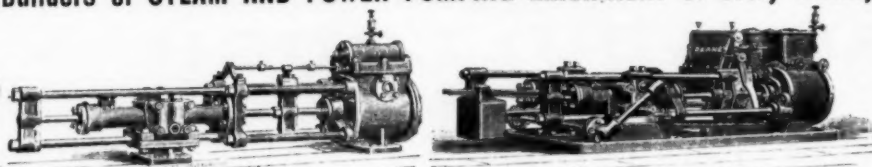
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Hydraulic Pressure
PUMPS

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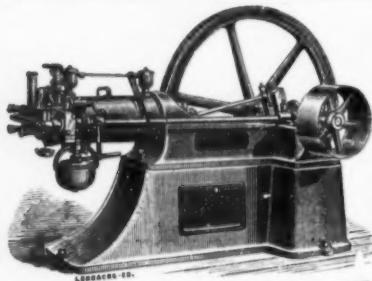
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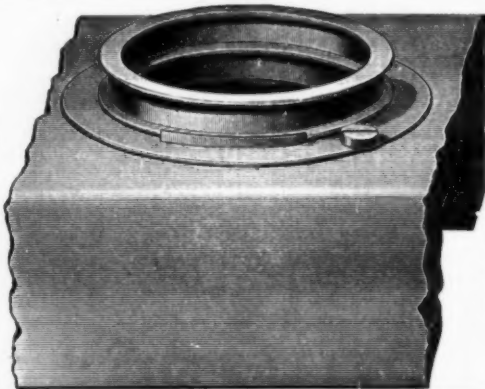
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DOUBLE ADJUSTABLE Spinning Rings.

GEORGE DRAPER & SONS,
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TELEGRAPH ADDRESS AND RAILROAD STATION,
MILFORD MASS.



	Number of Rings sold.	Number of Rings sold for repairs.
1869.....	6,025	
1870.....	20,258	
1871.....	38,648	
1872.....	94,204	12
1873.....	117,301	
1874.....	168,382	500
1875.....	223,924	963
1876.....	285,319	947
1877.....	270,811	946
1878.....	215,214	3,309
1879.....	336,918	8,007
1880.....	567,860	11,264
1881.....	659,730	8,974
1882.....	636,715	22,515
1883.....	416,500	21,689
1884.....	310,869	25,105
1885, 9 mos. 212,056		22,373
Total number sold.....	4,489,794	126,604
Total number in use 4,363,190.		

The great durability of our Rings is shown by the fact that we have more rings in use over twelve years old than all we have sold for repairs.

This statement shows unmistakably that a mill once supplied with our rings need think but little of the cost of repairs. As the number sold for repairs is an average of about twenty per cent. of the number sold the tenth year before, the average life of our rings will be at least twelve years.

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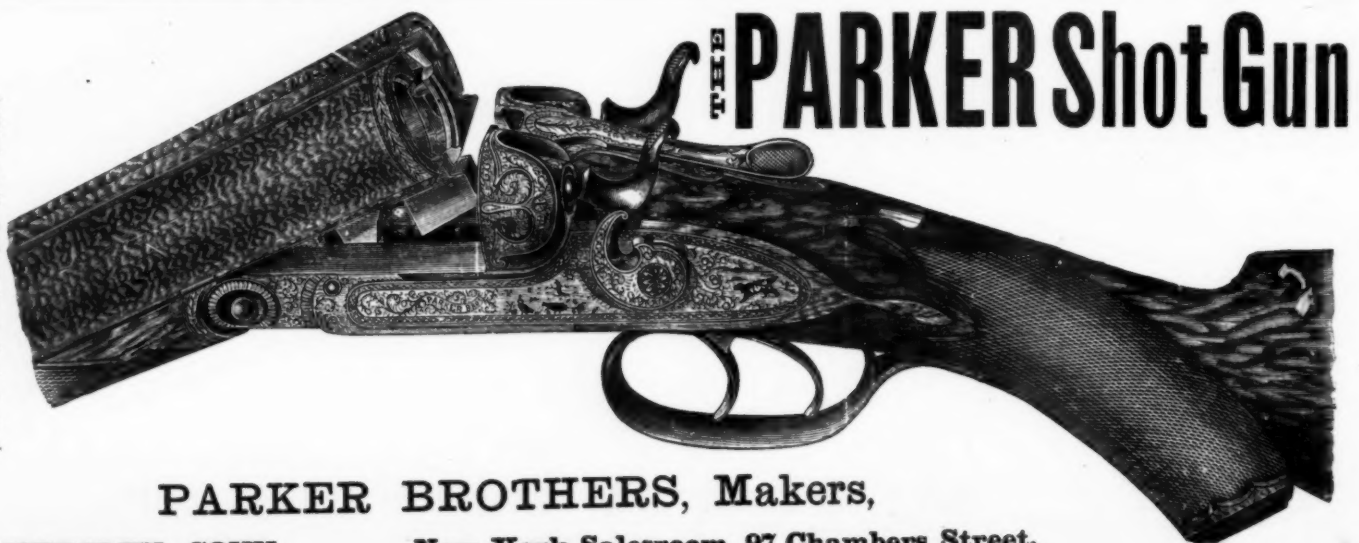
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New York Salesroom, 97 Chambers Street.

BALTIMORE Manufacturers' Record.

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BALTIMORE, FEBRUARY 13, 1886.

Vol. IX—No. 1.

With this issue the MANUFACTURERS' RECORD enters upon its ninth volume. It is a little more than three years since the paper came into the possession of its present owners. Those who did not know it in its earlier days would hardly recognize in the MANUFACTURERS' RECORD of today the MANUFACTURERS' RECORD of three years ago. From a small paper of 16 pages it has developed into one of the foremost industrial journals of the country. The process of evolution has been rapid but substantial. Its growth has been phenomenal, and its success without precedent in the history of trade journalism.

At the start, the editors, themselves Southerners, impressed with the vast and varied natural resources of the Southern States, and foreseeing their mighty possibilities as a manufacturing area, determined to devote their efforts to the work of aiding to build up Southern manufactures. The paper came into prominence as the exponent of the industrial interests of the South, and at once became popular. Its energetic management, its live, progressive policy, its persistent championship of the cause of Southern development, early brought it into prominent notice, and its fame rapidly extended. The wonderful development of the South is now attracting attention all over the world, and the progress of this development has been so faithfully chronicled by the MANUFACTURERS' RECORD that it is accepted everywhere as unquestioned authority on Southern affairs, and its statistics and statements are drawn upon by almost every writer and public speaker on

any topic pertaining to the industries of the South.

The first number issued by the present publishers was that of November 23, 1882. Its size, at that time, was 16 pages. Its management was conducted with energy and vigor, and the paper began at once to make rapid advances. Within less than three months the growth in business had made necessary an increase to 20 pages. It was not long before it again became necessary to increase, and four pages were added, making the number 24. Further additions were necessitated from time to time, and the paper grew to 28 then to 32 and recently to 36 pages, its present size, and the indications are that it will not be long before we shall have to make it 40 pages. During the severe business depression of the past year it has not only held its own, but has made continued advances.

It receives the advertising patronage of the foremost manufacturing establishments in the country. It numbers among its subscribers the most prominent houses and the officers of the largest corporations in the Southern States; the proprietors of mills and factories in every line of manufacture, leading hardware dealers, the presidents and managers of railroads, mining companies, pig iron furnaces, cotton mills, banks, etc. It has a constantly increasing circulation among capitalists and others, in the North and West, who desire to keep informed as to Southern affairs.

And not only in its business and in building up a reputation has it been successful, but we think we may, without boasting, claim that its efforts in behalf of the South have been fruitful in good results, and that it has aided largely in advancing the South's material interests.

While congratulating ourselves on the success that has followed our labors, we are sensible of how much we owe to our brethren of the press. From the Southern papers especially, we have, from the beginning, received kindly sympathy and generous encouragement, and we feel like inviting them to join hands with us in a general rejoicing over the prosperous and promising condition of the revived South, in whose cause we are laboring together.

The MANUFACTURERS' RECORD will continue in the course originally marked out for it. It will uphold the cause of the South, and will continue to press upon the attention of the world its attractions and advantages, its magnificent resources and capabilities.

UNITED STATES SENATE,

WASHINGTON, D. C., Jan. 31, 1886.

TO THE MANUFACTURERS' RECORD CO.:

Gentlemen—Your annual review of the industrial progress of the Southern States is as surprising as it is gratifying. I was not prepared for such a wonderful increase of capital and values. With this rate of improvement the South can and will be the richest and most prosperous portion of the American continent in a few years. In another quarter of a century she will be up alongside the highest developed regions of the North in material wealth. For five years I have insisted that for safe, solid investments of capital she presents advantages over any part of the country, and it appears capitalists are taking the same view.

Very truly yours, M. C. BUTLER.

A Correction of the New Orleans Picayune.

The New Orleans Picayune is not altogether satisfied with the statement that appeared in the MANUFACTURERS' RECORD of January 30 that the "cost of the railroads of the South and their equipment" is over \$1,250,000,000 against a little less than \$680,000,000 in 1880. We stated at the time that these figures were compiled from Poor's Railroad Manual, the accepted railroad authority of the country. The Picayune, however, wrongly assumes that this great increase is attributed simply to the building of new railroads, of which 10,400 miles have been constructed since 1880, and naturally thinks it represents too much water. Either the Picayune intentionally misrepresents our statement, which we do not believe, or else it was guilty of gross carelessness. We distinctly attributed this increase, not simply to the construction of new roads, as claimed by the Picayune, but said that "since 1880 the South has added over 10,400 miles to her railroad mileage, the building of which, added to the investment in old roads and their improvements, foots up nearly \$575,000,000. Now, the Picayune entirely omits the latter part of this statement, and makes it appear that we claimed an increase between 1880 and 1885 in the cost of Southern railroads from \$680,000,000 to \$1,250,000,000. The Picayune entirely ignores the enormous amount of money expended during the last five years in the improvement and development of the old railroads of the South, in the cost of new rails, new motive power, &c., all of which would in the aggregate count up rapidly into the millions. The Picayune, while criticizing our figures, admits, however, that it has not taken the trouble to examine Poor's Manual to see whether we were correct or not, but simply strikes at us without taking the trouble to find out whether we are wrong or not. If the Picayune had turned to Poor's Manual it would have found that the total amount of stocks and bonds of the railroads of each State is given in separate columns, and in addition to that, in another column it would have found the cost of the railroads in each State. Now our figures are from the cost column, and not from the columns of stocks and bonds, which are, of course, much larger in the aggregate. If the figures are wrong, Poor's Manual is at fault, and certainly Poor's Manual is as good authority upon railroad matters as the Picayune.

Basing its arguments upon this false foundation, the Picayune claims that our statistics as to the amount of capital and capital stock of new industrial enterprises are also misleading, as they include too much water. In a compilation of this kind, it is impossible to separate the actual amount invested from the capital stock, in cases of incorporated companies. And so, necessarily, we take the capital stock, but explicitly state,

so that there can be no excuse for a misunderstanding, that our figures include the capital stock of incorporated companies. To tell exactly to a dollar how much money is actually invested each year in new enterprises is, of course, impossible, but we do the next best thing possible and furnish, at an expense of much time and money, a statement of the capital and capital stock of new enterprises organized in the South, avoiding any possible exaggerations. This is certainly far better than having no information whatever on the subject, even though it may fail to meet the approval of the Picayune. Our figures are as near correct as human effort can make them. Considering the enormous number of small industries being started all the time all over the South which we do not enumerate, we know our estimate is less than the aggregate amount of capital invested, rather than an exaggeration.

Ignorance in Regard to the South.

There are vast stores of ignorance and misinformation on important topics floating around in the brains of a large number of people supposed to be generally well informed. It is the custom to deride the practice among foreigners, notably Englishmen, of coming over here, and after skipping across the continent and back again, going back home to write a book on "American Institutions," "Impressions Received in America," &c., but it is doubtful if any foreign writer on America has ever exhibited a greater want of familiarity with his subject than is shown by some Northern authors who undertake to enlighten the world on the condition of things in the Southern States. We refer now to industrial matters, and not to political or social questions, with which we do not undertake to deal.

This ignorance as to the industrial condition and progress of the South is the more inexcusable in view of the fact that there is scarcely a daily paper in the Northern or Western States that has not time and again pointed out and commented on the wonderful strides the South has made in the last five years in mining, manufacturing and agriculture. It is therefore surprising to find in so able a publication as the Century Magazine, statements showing the grossest ignorance of what is going on in the South.

In the Century for February there is a paper by Mr. Joseph Edgar Chamberlain, with the title "Will the Land Become a Desert?" in which the writer, after referring to the destruction of forests in the North, and the "vast area" of timber lands in the South, announces the astonishing fact, as to the extent of the "inroads already being made in Southern forests," that there are "five places in Kentucky where large saw mills have been erected within the last eighteen months," and that "numerous wood-

working establishments have been erected there and elsewhere in the South." He also hazards the prediction that "other Southern States will doubtless soon join Kentucky in the wood-working interest." Probably nothing more ludicrous than this has been perpetrated by any American humorist for a month. The description of an old colored couple's "Scurdgeon" to Washington from the country, given in another part of the Century, and Bill Nye's views on "International Copyright," as set forth in the department of "Open Letters," are not half so funny. Mr. Joseph Edgar Chamberlain's surprise that there should have been "five large saw mills erected in Kentucky in the last eighteen months," would probably be somewhat added to if he were told that there had been over forty "large saw mills erected," besides a hundred or more smaller ones; and his surprise would become amazement when he learned that not only is Kentucky not the only Southern State where saw mills have recently been erected, but that it is considerably behind some other States in this regard. In Florida, for instance, 111 saw mills have been started in the last two years, in Tennessee 68, in Alabama 53, in Georgia 51, in North Carolina 38, and so on, nearly 500 in all in the South. Besides these there are of course hundreds of smaller mills, of which we make no mention. The assurance that "Other Southern States will doubtless soon join Kentucky in the wood-working interest," is particularly timely and gratifying when it is remembered that there have already been erected in Kentucky in the past two years 55 wood-working establishments, and in the "other Southern States" over 400 more. Of these 81 were in Tennessee, 60 in Alabama, 50 in Georgia, 56 in North Carolina, 41 in Florida, etc. Besides these a large number of the saw mills referred to above have wood-working establishments run in connection with them. It is quite evident that Kentucky has been pretty considerably "joined" already. The wood-working establishments here enumerated include planing mills, furniture factories, box factories, cooperage shops, sash, door and blind factories, shingle mills, wagon and carriage factories, stave factories, handle and spoke factories, agricultural implement factories, wooden bowl factories, factories for the manufacture of novelties out of the waste of other factories, etc., etc.

Even if Mr. Joseph Edgar Chamberlain hesitated not to write on a subject of which he knew so little, it might be supposed that the editor of the Century, in selecting articles for publication, would correct or eliminate such palpable inaccuracies. It cannot be supposed that the editor himself knows so little of what is going on in the Southern States, whose marvelous natural resources and astonishing rate of industrial growth have attracted

the attention and wonder of the civilized world.

This is not the first time, however, that writers in the Century have misrepresented the South. It will be remembered that we had occasion to point out some misstatements made by Mr. Eugene V. Smalley in the Century for June, 1885. In an article entitled "In and Out of the New Orleans Exposition," referring to the South as a manufacturing area, he said, among other things that were not true: "There are single towns in Massachusetts and Connecticut whose annual product of manufactures nearly equals that of all the Southern States." We showed that in 1880 the highest value of manufactured products in any New England city was \$130,531,993 in Boston, while the value of manufactured products in the South was \$457,448,509, or about three and a third times greater. In Connecticut the largest manufacturing town was New Haven, with products to the value of \$24,040,225, or but a little over one twentieth of the value of Southern manufactures in that year. We showed that in Virginia alone the value of manufactured products was \$51,820,692, or more than double the value of the manufactured products of New Haven. These statistics were from the Census Reports, and were accessible to Mr. Smalley and to the editor of the Century. They were compiled in 1880, when the South was just entering upon the present era of industrial greatness.

It is unfortunate that these misstatements should be published in a journal of such standing and influence as the Century, to be read by over a million people. They carry with them, to some extent, the weight that attaches to the publication itself, and are calculated to do harm to the South.

Our Birmingham Letter.

Trade Matters—Southern Tariff Convention—The South and Free Trade.

[Special correspondence MANUFACTURERS' RECORD.]

BIRMINGHAM, ALA., Feb. 8, 1886.

Another week has gone without witnessing any noteworthy change in the situation as regards Birmingham iron interests. Pig iron is very firm at previous quotations, and is selling largely on Eastern account about as fast as it can be produced. As previously noted, the iron masters of the district would be well content to let stocks accumulate for awhile, as belief in better prices remains unshaken, and stocks are unprecedentedly low. The visible supply of pig metal, outside of lots already sold, does not exceed 5,000 tons, whereas 10,000@12,000 tons has been an ordinary surplus. But while producers would not object to accumulation, the present market offers a fair margin of profit, and so the product slides along toward the Eastern coast with its usual activity. The phenomenal cheapness of natural gas in Pittsburgh does not appear to affect our competing power as yet, and even a rise in the freight tariff on pig iron has not shut us out of Atlantic markets.

The general manufacturing interests of Birmingham are active in sympathy with iron, and there is a rush of preparation on all hands to get ready for the spring, which promises to be a very busy one. The new

furnaces, the new Union passenger station, the new hotel, and a large and well selected assortment of other new things, will furnish employment for a small army of laboring people, and that always means business. The new Union station spoken of is already making progress. The old Relay House, the first building of any pretensions erected in Birmingham, is being torn down to make room for it, and construction will commence as soon as the demolition of the late hostelry is complete. Work will begin on the new hotel very shortly. Property in the vicinity of these improvements and in every desirable location in the city continues to rise, and a great deal is being taken out of the market for improvement. The architects tell me that they are pushed very hard with plans for buildings of all sorts, to be put up as soon as the season opens, and I do not know of any class of business men who are not pushed.

Never since the day that the first spade was turned in this place has there been such steady and pointed enquiry for mineral property in the district. Many, perhaps a majority, of the latest enquiries are from a distance. Extremes meet here in a variety of ways. Several gentlemen from the far Northwest have bought winter homes in the same block with the summer homes of New Orleans and Mobile people, and similarly the East and West find common ground here for productive enterprises. Iron land is the favorite purchase, principally because it is growing dear, and people always want what it is difficult to get. Again, there are several large syndicates in the background waiting to fill their maws with certain amounts and proportions of coal and iron property before proceeding to develop on a grand scale. As I have before remarked, really attractive areas of ore land are growing rare in the market. Much of the Red Mountain territory is held by local furnace companies for their own behoof, or by citizens who have no idea of selling at anything like current offerings. Still there are a few lots that could be had on private terms to advantage. There is one of 160 acres within 1½ miles of the city just placed on the market. There is another a few miles north, of 560 acres, and quite a number scattered about in remote places. The two referred to are the only selections at present on sale here, to the best of my information and belief.

The interesting topic of the week in connection with coal is the approaching meeting of the Warrior coal land proprietors at Birmingham. It is called for the 10th, and will be well worth talking about afterward. The basis of the conference is the fact that 12 corporations and individuals own the heart of the Warrior coal field. Owing to the segregation of these interests there has been a good deal of competition in the family, and that competition has resulted in such a demoralization of prices for coal lands that nobody has been investing or offering to invest at reasonable prices for some time. It is now proposed to consolidate these 12 corporations and individuals into one body corporate, which, being not divided against itself, will stand out for something like the actual value of rich coal lands sold for development. It is a fact that coal lands that, if similarly situated in Pennsylvania, would sell freely at \$400@500 per acre, are yet plenty here at anything from \$15 to \$25. Of course, there are thousands of acres of wild-cat lands, or lands with inferior resources, offering at any price the buyer chooses to pay, almost; but I speak of choice coal lands properly placed and examined by experts.

The rapid extension of the Georgia Pacific Railroad through Walker county, westward from Birmingham, will serve to bring a very valuable section of the Warrior coal field into market and close communication with

this city and its connections. There is an opinion entertained by many that Walker county contains the cream of the Alabama coal deposits. However that may be, the vicinity is coming into active notice, and a good many of the foreign investments being made here at present are in that part of the field.

Solomon, or somebody else of equal wisdom, has remarked that "fair trade is no robbery!" From an industrial point of view free trade certainly is then. I am unable to say at this distance what may have been the net result of the MANUFACTURERS' RECORD's editorial request of its influential readers for their views as to the propriety and feasibility of holding a tariff convention. Certainly the suggestion found many warm supporters in this part of the country. The menace of the free trade party to our Southern industries is finding its way through the thickest skull in the section, and the agitation is beginning in earnest. A people which like ours are so extensively producers of raw material, can but take alarm at the current effort of treacherous foes and incompetent and addle-headed friends to put raw materials on the free list. It does not mend the matter any that certain Eastern manufacturing interests are willing. Their individual interests in the matter are well enough known, and so is their selfish indifference to the interests of American industry at large. One thing is certain: that if free raw materials would benefit the far Eastern manufacturers, the same principle would involve loss, damage and disaster to all interior industries. The same Eastern influences, which just now appear as the coparceners of the pro-British party in the fight for free raw materials, are notably among the loudest in their demands for highly-protected finished products of domestic manufacture. To that class of patriots the industrial South will have something very serious to say when the proper time comes. Either every native industry shall have reasonable protection against injurious foreign competition, or none shall! That is the platform on which the protection sentiment of the South is now erecting its fireworks, and the gentlemen who want pauper ore from Spain in ballast at Philadelphia, who want to shut American coals out of the gulf ports, and even squeeze native pig iron out of the cities of the East, will do well to lookout for the rocket sticks.

I fear that there is reason to suspect that some of the people who ought to represent industrial, hence protection, sentiment in Congress, are lamentably weak on the point, as they very likely may be on all others. The committee of the Eastern Pig Iron Association appear to have thought so after its effort to secure some promises of reasonable and patriotic action in Washington! The committee found the protection Democrats very limp in the back and quite inclined to the Morrison proposition to cut down the duty on pig iron, tentatively, from \$6.72 to \$5.00 per ton—of course preparatory to further reduction and ultimate abolition. A private letter from Mr. J. Wesley Pullman, an undoubtedly distinguished authority on such matters, sheds some lurid light upon this \$5.00 proposition! Mr. Pullman believes that "with some 1,200,000 tons of British pig iron now in store—Glasgow, Cleveland and west coast of England—the iron masters of the New South may well be advanced protectionists." He says: "Even a trifling reduction in the present duty of \$6.72 per ton may divert some of this enormous over-production to any of your seaports—to Newport News, Richmond, Charleston, Savannah, Mobile or Galveston!"

Mr. Pullman farther informs me that a recent cablegram gave the price of Middlesbrough grey forge iron at 30s. 6d.—say \$7.75 per ton—the lowest point ever reached. Ocean

freights from Glasgow to New York, now nominally 5s. @ 6s. per ton, for nearly a year ranged from 1s. @ 2s. per ton, a purely ballast rate: "Pig iron to my own knowledge has been carried from England to Boston, and even a small premium paid for the privilege of taking it as ballast!" English pig iron carried over as ballast could then be laid down in New York, Philadelphia, Baltimore, and so on, at about \$13 per ton, if the duty were reduced to \$5 per ton. A remarkably pleasant outlook for the American pig iron interest generally! But it is useless to grumble, we have got to have the fight and have it out, and the prevailing opinion south of Mason and Dixon's line was well expressed to me to-day by a gentleman who is at once a Democrat and a protectionist from his boots up. Speaking of the unnatural alliance between the Eastern steel producers and the pro-British party, he said of the former: "Let them remember that the minute they let down the bars the South will jump into the field and kick the whole fence into pieces." G. B. WEST.

A Southern Tariff Convention.

The necessity for some united action on the part of Southern manufacturers in defence of the tariff is becoming more and more apparent. It is important that Southern Congressmen should know the views of their constituents, and in no other way could Southern sentiment in favor of protection be so clearly and forcibly made known as through a convention of the advocates of a protective tariff. The manufacturing industries (and as a consequence all other interests) of the South are in danger. Manufacturers cannot afford to be apathetic. There is imperative need for immediate action. A convention such as we have suggested would show the extent of Southern antagonism to free trade, and would have a powerful influence on Congressional legislation. Are there not public-spirited men enough in Atlanta or Birmingham or Nashville or some other Southern city to take the initiative and extend a call for a convention? There is no time to lose. The forces of free trade are at work. Will the friends of protection remain inactive?

We are gratified to know that our suggestion is meeting with favor. In the MANUFACTURERS' RECORD of January 30 we asked for an expression of opinion from those who were in favor of a protective tariff as to the expediency of a tariff convention, and as to the most desirable point for holding it. Since then the following letters have been received:

THE UNION.

NASHVILLE, TENN., Jan. 30, 1886.

Editor Manufacturers' Record:

In regard to holding a Southern tariff convention, I am decidedly in favor of holding the convention if we can be assured of a respectable number. Can we get up the interest that will insure a truly representative body? If we can we ought to have it. Nashville is a good protective tariff city, and is centrally located. But probably Baltimore is the best place to have it, all things considered. If the convention is held, we will have a good delegation from Nashville, and the Union will take an active interest in making it a success. Very truly,

A. S. COLYAR, Editor The Union.

OFFICE OF ADAMS COTTON MILLS.

MONTGOMERY, ALA., Feb. 1, 1886.

Editor Manufacturers' Record:

Believing a reduction of the tariff would materially check the now rapid development

of the "New South," and that even "threatened legislation" has already proven one of the principal causes of the general depression experienced by all interests in this country for two or three years past, I most heartily concur in your suggestion that a convention of those of the South who favor a protective tariff should be promptly held. Protection has enriched the East, North and West. Why should not the South enjoy its benefits a few years, that she may attain to that importance in our common country for which nature has fitted her? Either Montgomery, Birmingham, Atlanta or Chattanooga would be central and suitable for holding the convention. Baltimore is too distant to hope for a large or general attendance. Very respectfully,

J. R. ADAMS, Prest.

CROZER STEEL & IRON COMPANY.

ROANOKE, VA., Feb. 3, 1886.

Editor Manufacturers' Record:

I am wholly of the opinion that a convention of the friends of home industry in the South would be of great benefit to the cause of protection in the South if held. It is of no moment in which city such convention should meet. It would do as much good in one city as another, provided the press would treat it fairly. It is by united action that the Southern manufacturers will succeed in gaining from the Representatives in Congress from the South the attention they deserve and need. Yours very respectfully,

D. F. HOUSTON, General Manager.

OFFICE OF LOWE & TUCKER.

CHATTANOOGA, TENN., Feb. 2, 1886.

Editor Manufacturers' Record:

I have read your editorials in relation to the subject of holding a convention at some desirable point in the South of those who favor a protective tariff. With a view of the interchange of ideas of advancing the interest of such a policy, I should certainly think that such a meeting would be very desirable, indeed. It would probably bring before the public men of the United States the feeling of the Southern people in a much more prominent manner than has been or could be done in any other way. I am most assuredly in favor of a protective policy for our government, and I cannot see how any person who has the interest of our nation at heart can look upon this subject in any other light. We see thousands of arguments in favor of a protective tariff everywhere we may go or in whatever part of the United States we may visit. That a discussion of general and individual interests is highly to be desired there can be no question. So far as the particular point at which such a convention could be called, I would name the city of Chattanooga as being more central than any other point that can be selected. Should the majority of those that are interested be centered upon this point, you may rest assured that our people will heartily respond in favor of such a convention, and do what is right in the matter. If there is anything that I can do in the matter I should be most happy to hear from you.

Very respectfully, S. B. LOWE.

PACOLET MANUFACTURING CO.

PACOLET, S. C., Jan. 30, 1886.

Editor Manufacturers' Record:

If a Southern Tariff Convention is held, in order to obtain the largest attendance, I would suggest some place south of Baltimore. I think Atlanta would be a suitable place. My own opinion is, the sentiment favoring a protective tariff is growing in strength among the Southern people.

Very truly yours,

JNO. H. MONTGOMERY, Prest. and Treas.

BIRMINGHAM, ALA., Feb. 6, 1886.

Editor Manufacturers' Record:

I believe a tariff convention, as indicated by you, would have a salutary effect on the action of Congress. I consider either Birmingham, Chattanooga or Atlanta favorable points to hold said convention. The danger

the Southern manufacturers have most to fear is that Congress may alter the present tariff so as to admit coal and ore into this country free of duty. The chief manufacturers East and North have grown up, prospered and become rich from a protective tariff. Under the favorable aid of natural gas, new patented inventions and improved machinery, they are now beginning to realize that it would be to their interest to dispense with the cost of the long haul necessary to procure the Missouri, Lake Superior and Southern ores by having the products of the Spanish and other European pauper-worked ore mines admitted free into this country. They are therefore rapidly changing front, and are now beginning to advocate free raw materials as a protection against the rising industries of the South. Should Congress place raw materials on the free list it would retard and stifle the industrial region of the South for years, or until the time would come when there would be a sufficient home or local market to consume the output of our furnaces. As the manufacturers of the East and North have been fostered and kept alive with strong doses of protection, I believe the young and impoverished South should receive, and is entitled to, similar treatment. Respectfully, FRANK Y. ANDERSON.

THE LYNCHBURG IRON CO.

LYNCHBURG, VA., Jan. 30, 1886.

Editor Manufacturers' Record:

As the representative of "The Lynchburg Iron Co." I am most thoroughly in favor of your suggestion for the convocation of a meeting of the manufacturing and business interests of the South, with a view to urging a tariff that will effectually protect and encourage these interests. "Protection" and "free trade" have ceased to be party issues long since, and every manufacturer in the South feels the need of a tariff that will protect his product effectually from successful competition from abroad, irrespective of the political party he may be identified with. I will co-operate most heartily with any such movement, and feel sure such a convention will be most generally advocated. Any centrally located city would do for such a meeting. Baltimore, probably, would do as well as any place.

I will gladly do anything in my power to assist you in the object you have in view.

Yours very truly,

WM. HENRY PATTERSON,

Sec. and Treas. Lynchburg Iron Co.

CHARLES E. COFFIN, MANUFACTURER OF MUIRKIRK CHARCOAL PIG IRON.

MUIRKIRK, PRINCE GEORGE'S CO., MD., }
January 29, 1886. }

Editor Manufacturers' Record:

I believe in a protective tariff. I believe that no country should import what it can produce itself if it desires to have its people happy and industrious, and by that prosperous. Especially this applies to this country, as we aim to have every man capable of taking his part towards the government of this country, and for that reason it should be the desire of the government to so promote the prosperity of all, that we should have no idle men and no pauper labor. We can produce coal, iron, cotton, cotton goods, and many other things as cheap in this country as in any other, provided our labor is obtained at the lowest rate of wages, but I hold that this is not what we desire. We want our wages regulated by home competition. I believe a tariff convention should be held in the South. My idea is that "Washington" is the best place for it. The Southern Congressmen would then see for themselves of whom the convention was composed, and it would, I think, have more weight with them than if it were held away from them. Yours truly,

CHAS. E. COFFIN.

FRANK KING, COLD-BLAST CHARCOAL CAR-WHEEL IRON.

VAN BUREN FURNACE P. O., }
SHENANDOAH CO., VA., Feb. 4, 1886. }

Editor Manufacturers' Record:

I do not fear any action except agitation on the tariff this session. The senate is a

safeguard for the present, and the way to insure protection is to send only such men to Congress as are protectionists at heart, protectionists from conviction. I cannot say that I have much faith in tariff conventions as a means of influencing legislation, but for the purpose of educating and stimulating the people they may be made a powerful factor. For this reason I decidedly advocate a more southern location than Baltimore for holding it, and think, all things considered, that Roanoke is the most available point. By the Norfolk & Western system it would attract from Tennessee and the Southwest as other points could not.

Yours truly, FRANK KING.

MOUNT VERNON MILLS.

BALTIMORE, February 6, 1886.

Editor Manufacturers' Record:

I am in favor of a protective tariff and such a convention as you suggest to be held wherever the majority so favoring may decide, but my individual opinion is that Baltimore should be the place, for the reasons named in your issue of 30th inst., and its proximity as well to the North, which is equally interested, if not more so, than the South. The more the better, no matter where from, for success.

Respectfully yours,

RICHARD CROMWELL, Prest.

THE NATIONAL MANUFACTURING CO.

NASHVILLE, TENN., Feb. 2, 1886.

Editor Manufacturers' Record:

I am in favor of protection, and think it well to hold a convention such as you suggest. I consider this city a good place for it as first choice, Baltimore next.

Respectfully, A. DAHLGREN, Treas.

OLD DOMINION IRON AND NAIL WORKS CO

RICHMOND, VA., January 30, 1886.

Editor Manufacturers' Record:

I am opposed to any action at this time in Congress leading to a reduction of the tariff. The tariff certainly needs a revision, but such a duty cannot be entrusted to Mr. Morrison and his friends. If a convention such as you suggest is held, it should be in the South. Baltimore is not the place for it.

Very truly, R. E. BLANKENSHIP.

TECUMSEH IRON COMPANY.

TECUMSEH, ALA., Feb. 6, 1886.

Editor Manufacturers' Record:

Your suggested convention of Southern men who favor the general policy of protection, by tariff laws, of home labor, would, in my opinion, be productive of great good, if proper means are taken to secure a full and representative attendance of labor and capital, and I would recommend Chattanooga, Birmingham or Atlanta, as the place of holding the convention, and precedence in the order named. Yours truly,

WILLARD WARNER, Prest.

CLIFTON FORGE, VA., Jan. 30, 1886.

Editor Manufacturers' Record:

We are undoubtedly advocates of a protective tariff. This State has an abundance of minerals that cannot be worked as profitably as they should, for a lack of diversified manufactures. We would name Richmond or Baltimore as the place for holding the Southern Tariff Convention.

Yours, HILEMAN, WARING & CO.

CAPON IRON WORKS.

HARDY CO., W. VA., Feb. 1, 1886.

Editor Manufacturers' Record:

Your idea of a Southern Tariff Convention is a very good one. I think it ought to be held south of Washington, to show the protectionists of the North that the South is alive to their interests, and too, it would have a better influence on the South. I am for protective tariff on all manufacturing industries, farming, mining, &c., that need protection against foreign importation, so that labor can be paid the highest wages, and capital be paid a fair remuneration.

Respectfully, J. J. KELLER.

THE SWIFT MANUFACTURING CO.

COLUMBUS, GA., Jan. 30, 1886.

Editor Manufacturers' Record:

Believing it to be for the best interest of our country, more especially the "New South," for Congress to let the present protective tariff alone, we very much favor your plan for a convention of Southern manufacturers. We would prefer Atlanta, Ga., to almost any other Southern city as the place for holding such convention. The date should be early as possible.

Yours truly, G. M. WILLIAMS, Treas.

CONSTRUCTION DEPARTMENT.

WE PUBLISH, every week, a list of every new factory, of whatever kind, projected anywhere in the South; every railroad undertaken, and every mining company organized. This information is always fresh, and, by enabling manufacturers to correspond with the projectors of such enterprises before their supplies of machinery have been purchased, is of great value. Manufacturers will find it to their interest to read this department carefully each week.

ALABAMA.

The Birmingham Fire Brick Co., Birmingham, Ala., will add new machinery to their works, to manufacture coke oven bricks.

The Eufaula Oil Co., Eufaula, Ala., will put new boilers and a new 80-horse-power engine in their works, at a cost of \$2,500.

W. C. Bibb, Jr., and C. B. Wilkens have organized, at Montgomery, Ala., the Alabama Construction Co., to manufacture lumber. Will build their factory at Vesuvius near Montgomery.

The capital to build a compress, at Talladega, Ala., has been subscribed, and a stock company will be organized.

James E. & W. L. Seat are erecting a steam corn mill at Huntsville, Ala.

C. Martin has recently erected a grist mill and cotton gin at Lincoln, Ala.

R. B. Lumpkin, Rock Run, Ala., is negotiating for new machinery for a lumber mill.

D. J. Pail is erecting a large steam saw mill near Camden, Ala.

Edmondson & Schmidt have established another machine shop at Birmingham, Ala.

The Anniston Car Works, Anniston, Ala., reported last week as having been purchased by W. R. Tuttle, of Knoxville, Tenn., will be reorganized as the Alabama Car Co., and will be leased or operated by the company.

Mr. Hightower will erect a large saw mill at Riverside, Ala. The capacity, it is stated, will be 50,000 feet per day.

Douglas & Randall, of Nebraska, have purchased a large tract of timber land at Demopolis, Ala., and will erect a stove and barrel factory.

The Caldwell Hotel Company, capital stock \$120,000, has been organized at Birmingham, Ala., to build a large and handsome hotel. H. M. Caldwell is president and James F. Johnson, secretary and treasurer.

The Tuscaloosa Manufacturing Co. have purchased a large amount of new machinery, which they will put in their mill at Cottondale, Ala.

Hubbard Sims, of Talladega, Ala., will, it is reported, build a saw mill on the Louisville & Nashville Railroad.

Nelson, Hogue & Lee have formed a company at Marion, Ala., to manufacture a patent cultivator.

ARKANSAS.

Newport, Ark., is discussing the building of water-works.

FLORIDA.

O. E. Copeland and A. W. Starbird will purchase the Orlando planing mill at Orlando, Fla., and move it to another location, and add new machinery.

W. R. Keiling & Bro., Pensacola, Fla., are making arrangements to purchase pine timber lands and erect a lumber mill in the near future.

H. H. Speare, Chattahoochee, Fla., contemplates erecting a steam grist mill at River Junction, Fla.

H. Evans will replace his lumber mill at Bonifay, Fla., with a heavier mill, using a 65 horse-power engine.

A saw mill will be located at Scisco, Fla.

GEORGIA.

Sample, Harvey & Co., Columbus, Ga., have completed their planing mill and sash, door and blind factory, and not a machine shop as reported last week.

The Georgia Fence Co. have established a branch factory at Rome, Ga.

G. B. Pettit has received the contract at \$21,475, for rebuilding the First Baptist church at Macon, Ga., recently burned.

There is talk of an iron foundry being started at Cartersville, Ga.

The yarn mill previously reported to be built at Augusta, Ga., by Edward H. Coates & Co., of Philadelphia, will be 70x260 feet, and have 10,000 spindles. 150 hands will be employed. Work will begin in a few weeks.

A \$50,000 stock company is being organized to develop gold lands in Cherokee county, Ga., with W. R. Ware as president and George Lowndes as treasurer.

The Savannah, Dublin & Western Railroad Co. are negotiating for 22,000 tons of steel rails.

KENTUCKY.

John Brenner, Covington, Ky., has contracted for a 25-ton ice machine, which he will erect at his brewery.

Noonan, Hart & Co. have purchased the tobacco factory of McNamara Bros., Covington, Ky.

A bill has been introduced in the Kentucky legislature to authorize Bowling Green to issue bonds for erecting electric lights and a bill to incorporate the Highland Street Railway Co., of Newport, Dayton and Bellevue.

LOUISIANA.

The Peoples' Improvement Co., capital stock \$250,000, has been incorporated at New Orleans, La., with Lucien M. Gex, as president; Louis R. Sassiot, vice-president and Alfred Saulet, secretary, to build canals, bridges, draining machines, and to operate mines and chemical works and to do a general constructing and contracting business.

MARYLAND.

C. C. Pracht & Co. will erect a 40 horse-power boiler and engine, at their candy manufactory on Franklin street, Baltimore.

R. H. Patchett and George W. Parrot contemplate establishing a steam laundry at Easton, Md.

The Ford Acme Renovator Co. has been incorporated at Baltimore.

Poole & Hunt, Baltimore, are building a new boiler shop, 80x120 feet, new smithery 60x150 feet, new erecting shop, and enlarging their machine shop.

The Hochhausen Electric Light Co., capital stock \$300,000, has been incorporated at Baltimore, with Henry W. Rogers, W. A. Hanway, Edwin B. Coale, Sebastian Brown and Joseph M. Cone as incorporators and directors.

The Consolidated Gas Co., Baltimore, contemplate increasing the capacity of their plant by erecting new works, to manufacture gas by the water process.

Robert Stewart is building a distillery at Highlandtown, near Baltimore. A 100-horse-power boiler and a 50-horse-power engine will be used.

MISSISSIPPI.

A bill has been introduced in the Mississippi legislature to incorporate the Meridian Water Works Co.

A stock company has been formed at Natchez, Miss., to erect a compress.

NORTH CAROLINA.

H. M. Johnson and Marshal Jubin are building a smoking tobacco factory at Morganton, N. C.

H. M. Johnson, Morganton, N. C., is negotiating with parties in Hickory, N. C., with a view to starting a tobacco factory at Hickory.

The Swain County Terra Cotta Co., capital stock \$5,000, has been organized at Whittier, N. C., to manufacture terra cotta.

It is rumored that a smoking tobacco factory will be established at Rocky Mount, N. C.

The Richmond & Danville Railroad Co. will build a new depot, 50x170 feet, at Salisbury, N. C., in place the one recently destroyed by fire.

C. P. Day & Bro. have recently purchased the fish factory of Chadwick, Jones & Co., near Beaufort, N. C., and are enlarging its capacity.

The Mecklenburg Iron Works, Charlotte, N. C., are being enlarged.

Lea, Warren & Pope have established a factory at Company Shops, N. C., to manufacture tobacco hogsheads and tierces.

Several car loads of new machinery are being received at the Steele mine, in Montgomery county, N. C.

H. W. Reed has added some new machinery to his spoke factory at High Point, N. C.

Rackle Bros. will open another stone quarry near Wadesboro, N. C.

TENNESSEE.

Mr. Cushman, of Iowa, has, it is reported, made arrangements to build a 5-ton ice factory at Tullahoma, Tenn.

Mr. Crosby, Dalton, Ga., will move his steam saw mill to Mouse, Creek, Tenn.

T. O. Dougherty, Marbut's, Tenn., contemplates adding a grist mill to his saw mill.

John McCrowell, Bristol, Tenn., will start a brick yard.

It is stated that a Chicago raw hide manufacturing company will erect a \$200,000 plant at Nashville, Tenn., if one-half the amount of stock is taken by local capitalists.

Murray Bros. will move their saw mill from Cleveland to McDonald, Tenn.

There are prospects of a new soap factory being started at Chattanooga, Tenn.

Lewis Peach has erected machinery at Fayetteville, Tenn., for sawing stone.

The East Tennessee Tobacco Manufacturing Co., reported last week as organized at Greeneville, Tenn., will be incorporated by S. R. Brown, F. Milligan, C. H. Milligan, W. A. Susong and R. Emerson. The capital stock, it is stated, is to be \$70,000.

T. B. Clark and W. P. Hickerson have formed, at Manchester, Tenn., the Clark Pulp Co.

TEXAS.

Todds & Stanley, St. Louis, have received the contract for erecting a flour mill at Dallas, Texas, with a daily capacity of 500 barrels. The cost will be about \$30,000.

Mr. Alexander, representing the Vanderpoele Electric Light Co., is in Sherman, Tex., negotiating for the erection of a plant.

The machinery has been ordered for a roller flour mill at Bowie, Tex.

A flour mill, it is reported, will be erected at Van Alstyne, Tex.

J. R. Stuard will soon erect a roller flour mill at Midlothian, Tex.

VIRGINIA.

T. J. Howe has started a boiler repair shop at Norfolk, Va.

Edward & George Wright are fitting up a building at Leesburg, Va., with machinery for a steam laundry.

Bills have been introduced in the Virginia legislature to incorporate the Clinch River Railroad Co., the Mineral Springs Railroad Co., with W. D. Pollard, C. H. Krumbaar, H. G. Ward, Daniel Bray and others as incorporators; the Henry & Roanoke Railway Co., and the Wytheville & Iron Mountain Railroad Co.

WEST VIRGINIA.

The Ripley & Mill Creek Valley Railroad Co. has been incorporated to build a road in West Virginia, from Ripley to the mouth of Mill creek. The capital stock is not to exceed \$75,000.

P. H. Morris, of Bristol, Pa.; Wm. Stiles, of Camden, N. J.; M. Van Hartingen, Geo. W. Edwards and D. Dodson, of Philadelphia, have incorporated in West Virginia, the Railroad Construction Co., capital stock \$1,000, with privilege of increase to \$1,000,000, to build railroads, bridges, water and gas works, &c.

BURNED.

D. C. Casey's saw mill and gin at Rolling Fork, Miss.

Hamburger & Stafford's grist mill and furniture factory at Barnesville, Ga.; loss \$7,000.

The saw mill of Wiley & Conrad, Brookstown, N. C.

The ginnyery of J. W. Chamblee, at Swan Lake, Ark.; loss \$7,000.

The saw mill of Conrad Bros., near Vienna, N. C.

The Dayton Organ Factory, Dayton, Va.; loss \$20,000.

James Brazzy's mill at Garrettsburgh, Ky.; loss \$5,000.

The mill of Mr. Baker, near Rectortown, Va.; loss \$3,000.

Planing Mill and Sash Factory.

COLUMBUS, GA., Feb. 8, 1886.

Editor Manufacturers' Record:

We have just completed our new planing and moulding mills, and sash, door and blind factory; two stories high, having 15,000 feet floor surface. We have a 50-horse-power engine, and 34 wood-working machines. We expect to turn out a superior quality of work and do a thriving business.

SAMPLE, HARVEY & CO.

Oil & Gas Co.

WHEELING, W. VA., Feb. 9, 1886.

Editor Manufacturers' Record:

The object of our company is to bore for gas and oil, and pipe the same to the manufacturing towns in this vicinity, on the Ohio river. Active operations will commence soon as the weather permits.

WHEELING & OHIO OIL & GAS CO.

Enlarging Woolen Mill.

WACO, TEX., Feb. 5, 1886.

Editor Manufacturers' Record:

Our Mr. S. F. Kirksey is now in the East, buying new machinery.

SLAYDEN KIRKSEY WOOLEN MILL.

LOCKWOOD, GREENE & CO.

MILL ENGINEERS

Office, 65 Westminster St., Providence, R. I.,

Carefully prepared plans, specifications and estimates furnished for the construction, equipment and organization of new mills and the revision and improvement of old.

Copper in the South.

BLUE WING, N. C., Feb. 8, 1886.

Editor Manufacturers' Record:

The copper industry of America, though yet comparatively in its infancy, is assuming gigantic proportions, and yearly is more and more attracting the careful attention of the political economist and the man of business. A generation ago America bought copper; to-day we are one of the chief producers. About one-third of the total product of the world, or 64,000 tons, is American. What an advance! What a stride from the position of an importer to that of a formidable producer, competing successfully in the metal marts of the world! Michigan, more than any other State up to the present time, has been the recipient of the most benefit. Its copper mines have lifted it from the status of a lumber field to that of the main producer in the United States—a State of wealth and influence. Its Calumet and Hecla shines like a star in the firmament, having enriched its stockholders by princely millions. Arizona has been set upon the high road to prosperity and Statehood by enormous outputs of the metallic ore. Her dry alkali deserts, precipitous mountain ranges and canons are no barrier where wealth lies imbedded. From ice-bound Montana the production of copper is yearly on the increase, and already it has been an important factor in making up the tables of the statistician. The Southern States up to the present time have been small producers, not on account of a scarcity of the mineral by any means, but because the capital for developing purposes was lacking. Virginia, North Carolina and Georgia may safely be considered the prospective copper field, and the conditions for the production of it—the erection of metallurgical works for its successful treatment—are as favorable and decidedly more so than in any other section of the Union. Viewing the section from a business man's standpoint, one cannot but be favorably impressed with the cheapness of fuel, coal and manual labor, three important factors as regards conditions.

The attention, it seems, of the prospective investor has heretofore been turned to the gold and silver deposits of the South, to the exclusion of copper. A change is taking place, however, and it is not unreasonable to predict from present indications that the South has set in upon a new era of prosperity, and that she will contribute a large share to the next yearly output of copper. Up to January, 1885, the total amount of dividends paid by gold mining companies was about 16¼ million dollars, by silver mining companies about 15 million dollars, and by silver and lead mining companies 14½ million dollars. The aggregate of the copper mining dividends to the same date exceeded 34½ million dollars. Is this not a remarkable picture? Is it not meet for reflection?

CHARLES W. EDGCOMBE.

A Southern Town Waking Up.

MILLEDGEVILLE, GA., Feb. 4, 1886.

Editor Manufacturers' Record:

Milledgeville, Ga., has wonderful advantages. No city in the South can show better. We have been asleep, but have waked up. We have good railroad facilities, a splendid section to sell to, the finest water power in Georgia, easily utilized, and the place for capital. Respectfully,

W. W. LUMPKIN,

Vice-Pres. Milledgeville Business Union.

ADVERTISERS wishing to reach manufacturers of all classes, mining companies, steel, iron and hardware dealers of the entire South, cannot find a better medium than the BALTIMORE MANUFACTURERS' RECORD. We are always prepared to furnish proof of our claims as to circulation.

MINING NOTES.

By T. K. BRUNER, Salisbury, N. C.

MONTGOMERY COUNTY.

Too much prominence cannot be given this county just now, since in it are being conducted some of the largest mining schemes in the State. The

RUSSELL MINE

is keeping up. They have shipped four lots or bars of gold to London; the first three were worth \$6,315, and the last one more than \$2,000. Some of the London owners have visited the mine, and in reporting to the company the result of their observations, they say: They had sunk a shaft of about 75 feet, and they had hitherto to work that shaft by means of a windlass and rope; now they have started the Buoleigh, and can sink eight feet in 48 hours. They had run a tunnel from the main shaft in Riggion hill, from the 35-foot level, which intersected the windlass shaft on the "Solageve" lode. This saved time and money in hoisting direct from the main shaft. They are running north, south, east and west, and find fair ore in all directions. They continue, "Since the mine has been at work the property has grown enormously in value. An enormous price is being paid for property in North Carolina. There is an abundance of ore; all that is needed is stamps; 20 stamps is a small thing for a mine like theirs. They need one to two hundred, and could keep 500 going." They are enthusiastic, but the facts seem to bear them out. The

APPALACHIAN MINING CO.

is the name of another English syndicate organized to work in Montgomery county. They have a small tract of some 60 or 70 acres, adjoining the Russell Mine. They report a bold, strong lode, or ore body, of varying width—sometimes as much as fifteen feet—composed of quartz in talco-slate, which is the usual nature of the ore found in that (Huronean) formation. Bodies of ore of that size and character are apt to be lasting in that formation, and the development of the Russell, next to it, makes the probability of success hardly susceptible of doubt. This lode is being prospected and developed by means of cross cuts and drafts, and it has been proven to a depth of more than fifty feet. The ore is of good grade, ranging from \$8 to \$15 to the ton, and is practically free from sulphurets. Individual assays run much higher than the above figures, but the average is not far from the figures named. But little machinery has been employed here as yet, but as it is being developed with English money, it is probable that a full plant will be placed in the near future. The same gentlemen are also interested in the Coggins Mine, in that county.

THE STEELE MINE.

Some of the machinery is going into place now, and as soon as it can be gotten from the depot station—soft roads hinder—the remainder will go into position. In the meantime work is progressing rapidly underground. Several shifts are employed, opening new ground and clearing and timbering such of the old work as may need repairing. The ore here is slightly complex, carrying sulphurets of iron and copper and also galena, or argentiferous lead ore. Formerly some wonderfully rich seams of pure gold were discovered. These were so rich that the ore clung together after being fractured by the discharge of the blast. This was during the time that ex-State Treasurer, J. M. Worth, had charge of the property.

SALISBURY.

Since the successful operation of the Yadkin chlorination works, at Salisbury, it seems that there is a chance for that place to become an active center as an ore station. The work of reducing and separating the metal from the ore done at the works

there has proven entirely satisfactory. They buy the ores outright, paying cash, and then work them for their assay value. Within a radius of 50 miles there are no less than from 300 to 400 mines or well-known bodies of good ore. These should feed a very large works, and it is encouraging to note that ores are finding their way to Salisbury, though it was very slow work at first. Salisbury is also a distributing station for mining machinery.

THE Anniston Car Works, of Anniston, Ala., which have been idle for some time, have been sold for \$9,133, to W. R. Tuttle, president of the Knoxville Iron Company, who will at once reorganize them and put them in operation. Anniston is to be congratulated that this important enterprise is again to be at work, furnishing employment to many hands and largely helping to swell the volume of the city's business. With cheap iron and cheap lumber the building of cars ought to be a profitable industry in the South. The order for 500 cars for a northern road, lately received by the Roanoke Machine Works, of Roanoke, Va., ought to stimulate other Southern car builders to bid for Northern work.

Certainly all the cars for Southern roads, at least, ought to be of Southern construction. Why should we ship our timber and pig iron North in its crude state to be returned in the shape of cars? Why should not the South not only build its own cars, but also build for Northern and Western roads? The time has come when we must cease to produce simply the raw materials. Birmingham, Chattanooga, Anniston and other centers of pig iron production are already making good progress in turning their pig iron into manufactured products of various sorts, but still there is room for a great increase. It may be well to boast that the South can produce pig iron at such a small cost as to profitably ship it north, and that Southern timber is in demand among Northern car builders, carriage and wagon builders, agricultural implement makers, &c., but how much better it would be to boast that the Southern demand was fully equal to the Southern production of iron, and that, instead of our lumber going north and west in its crude state, it was being more largely turned into the thousand and one uses to which it is put in Southern shops!

THE Birmingham Chain Factory, of which mention has previously been made in the MANUFACTURERS' RECORD, has commenced turning out chains. This is the only chain factory in the South. The building is 200 by 360 feet, fitted with the most improved machinery, and the prospects are favorable for its being a decided success. Birmingham is rapidly adding to her diversified industries, and at the present rate of progress her own foundries, machine shops and kindred enterprises will ere long consume about all the iron her furnaces can produce.

A Watch that Winds Itself.

A watch that winds itself by the motion of the wearer is the latest wonder of Europe. The new automatic timepiece is called in Switzerland, where it was invented, the "Marche-Marche." The watch is a stem-setter, and in but one particular differs from the ordinary watch as to exterior appearance. Its "works" are protected by a square case, instead of a round one, for a reason that will appear after the other features of the watch have been described in detail.

The prime feature of the watch is the automatic self-winding mechanism, which attains the object in view to perfection. On the side of the watch where the arbor of the winding barrel is exposed, an arm, secured at one end, and with a hammer-like attachment at the other, moves downward, whenever disturbed, from a position of absolute rest. The force of a spring adjusted under the arm furnishes the reaction, and the oscillation is repeated by every step taken by the wearer. This is transmitted to the lock of the mainspring barrel by the wheel, the circumference of which is adapted to the clutch of a dog that "holds fast all it gets," and the most ordinary walking exercise upon the part of a wearer serves to wind it up full. The watch, when used for the first time, is wound with a key, but never after is the key required if the watch is worn regularly by any one of the most moderate habits of peregrination. The square case is essential to the successful action of the self-winding apparatus, for the reason that it must stand horizontally, and this can only be when the watch has an upright position in the pocket.

Upon the face of the watch is the small dial or manometer, which constantly indicates the tension to which the spring is wound, and by a glance the wearer of the watch may tell for how many hours the watch is wound. The running capacity of the "Marche-Marche" when fully wound is sixty hours, as is indicated by the manometer when its hand points to the number at the top of the dial. The amount of exercise required to wind it full is represented by six miles' walking. The advantage urged in the automatic winding mechanism is the absence of the hazard in missing trains and sowing seeds of dissension in the family by the late arrival at dinner because of forgetfulness or negligence in the manner of winding the watch. The absence of necessity for any contact of human hands with the interior of the watch is urged as an additional argument for durability, and its shape, which at first seems odd, is better adapted to rich and artistic decoration. The "Marche-Marche" is entirely a hand-made watch and is quite expensive.

THE New Orleans Times-Democrat concludes as follows a lengthy editorial review of our report on the industrial progress of the South for 1885, published January 30:

Judging from extraneous information and knowledge, we should feel inclined to regard the MANUFACTURERS' RECORD's presentment for 1885 as closely approximating the true history of the matters treated, and as a very worthy achievement of an enterprising, painstaking, influential and patriotic journal.

THE National Electric Light Association convened its second annual session in Baltimore, at the Carrollton Hotel, Wednesday, 10th inst. Our time of going to press is too early to enable us to make any mention of the proceedings.

THE very ingenious automatic railroad signal and safety system, recently patented by Mr. Elias E. Ries, an electrician and mechanical engineer, of Baltimore, has been subjected to several tests with entirely satisfactory results. The system is very comprehensive and seems to be capable of rendering railroad accidents very nearly impossible.

The New York Cable Railway.

The following description of machinery erected by Messrs. Poole & Hunt, of Baltimore, for operating a cable railway in New York, is from the Scientific American:

For several months a cable railway has been running steadily and without interruption of any kind on 10th avenue, New York, from 125th street north for a distance of about $3\frac{1}{4}$ miles. The massiveness of the machinery, the admirably planned and handsome building in which it is placed, and the smoothness with which everything works, justify us in presenting a somewhat detailed description.

This system differs in many essential points from those in use elsewhere, and is so designed, by means of duplicate cables and independent engines and driving gear, as to insure the continuous operation of the road under all probable conditions arising from accidents of any nature. In a city like New York a great many street car lines are operated continuously during the day of twenty-four hours, and as it is impossible to get machinery and wire ropes that will run forever without stoppage for repairs, it becomes almost absolutely necessary that some plan

being 28 inches in diameter by 48 inches stroke; each flywheel is 18 feet in diameter and weighs 40,000 pounds. Upon each engine shaft is a gear 6 feet in diameter and 18 inches face, meshing with a gear 13 feet in diameter on the line shaft. (For convenience of description, we will consider the machinery driving the drums over which the cables pass as being divided into two sections, one at each side of the engines). This shaft is 12 inches in diameter and 100 feet long, and at the center is provided with a coupling, in order that either side or section can be operated independently of the other and by either engine.

The shaft revolves in ten bearings, and drives at each section a system of gearing carrying two sets of cable drums. As will be seen from the engravings, particularly the enlarged view of one of the sections, Fig. 3, the gearing is placed in the center of a rectangular space, upon each long side of which are two drums working together. Thus there are four sets or pairs of drums, each pair with its own cable, and either of which can be operated independently of the others, or all may be worked at the same time. The two cables of the same section constitute the double ropes that pass over the same route

taken up by winding it once more around the driving drums, thereby saving the time, trouble and expense of splicing. The outer ends of each pair of drum shafts are connected by a strut, adjustable in length by a key, and which serves to take the strain created by the cable passing around the drums, and relieves the bearings.

Each pinion on the line shaft is provided with a friction clutch operated by a handle lever, the bearing points of which are so arranged that there is no strain brought upon the shaft to throw it either way in the direction of its axis when the clutch is closed. The clutch consists of two sets of steel plates, one set secured to the pinion and the other to a sleeve sliding longitudinally upon but revolving with the shaft. The plates of one set alternate between those of the other, so that when pressed together by the lever, operating through a compound toggle, the friction between them is sufficient to revolve the pinion with the shaft.

The incoming portion of the cable passes around the drums, then around a sheave on a car running on tracks laid on the edges of the pit, shown in Fig. 1, and then to a sheave located so as to guide the rope in the trench along the middle of the street, as shown in

Poole & Hunt, of Baltimore, Md. Its smooth and almost noiseless working shows the accuracy and skill displayed in executing the designs, while the great size of many of the parts shows the facilities at their command, and conveys some idea of the extent of their works. The duplicate system for cable railways is the invention of Mr. D. J. Miller, of New York.

Poole & Hunt have also designed and built the machinery for the Chicago Cable Railway, of Chicago, Ill.; the Kansas City Cable Railway, to Kansas City, Mo., and the North Hudson Railway Co., of Hoboken, N. J., the last two of which are elevated structures. They have also recently made some improved grips, track brakes and rope lifts, which are now being applied to the cars of the Hoboken company, and by which it is expected to overcome the difficulties that are constantly occurring on the New York and Brooklyn bridge.

Tariff.

Let not our readers shiver at the head of this writing. We do not meditate a heavy newspaper columbiad on the appalling and Brobdingnagian subject of the tariff.

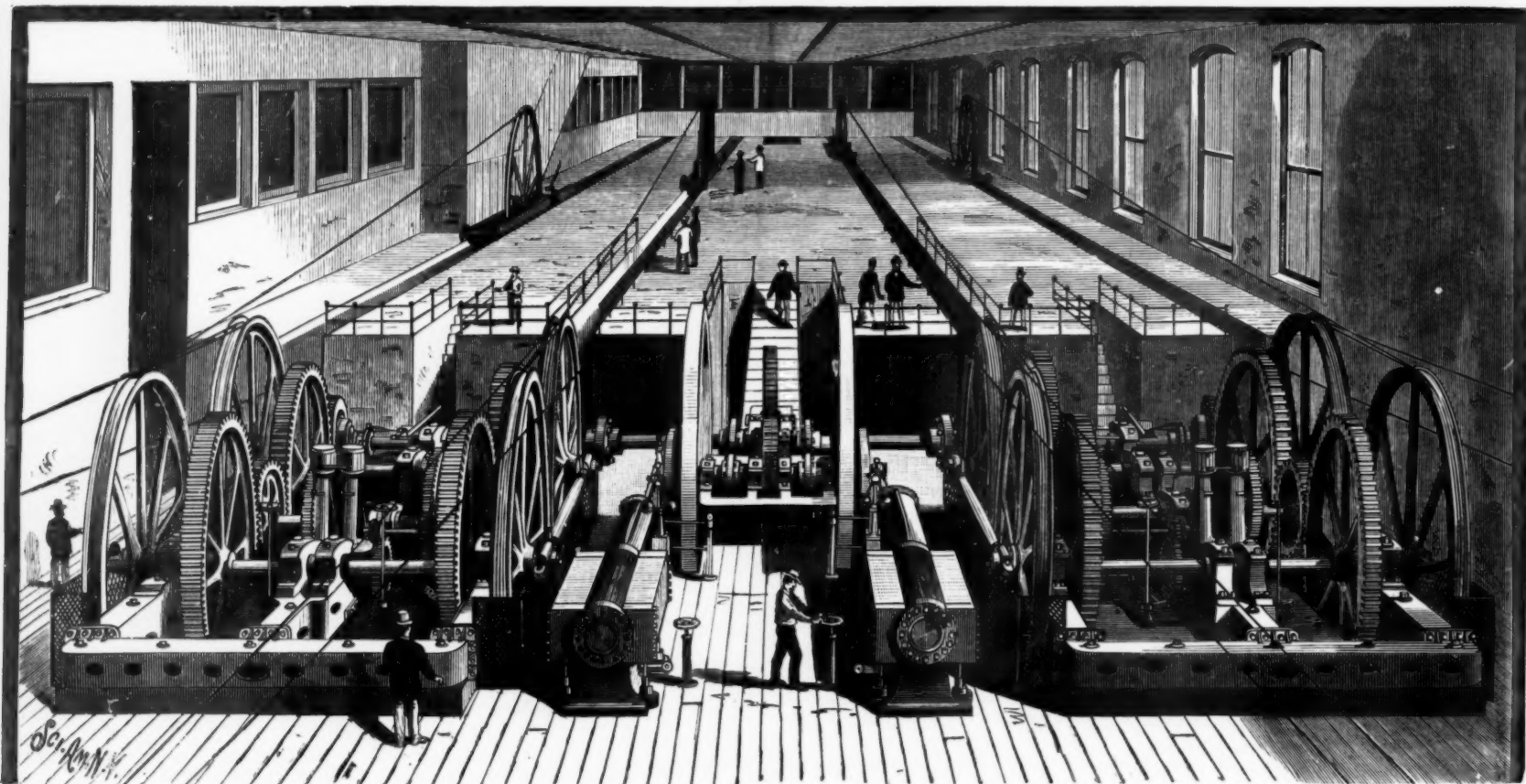


FIG. 1.—OPERATING MACHINERY OF TENTH AVENUE CABLE RAILWAY, NEW YORK CITY.—LOOKING TOWARD THE REAR.

of duplication should be adopted. We therefore find that the principal characteristic of this system is, of course, the double line of cables that run side by side through the trenches. While one of these cables is working, the other is held as an auxiliary or reserve, only to be called into operation should anything disable the first. The machinery is so arranged that the load can be easily and quickly transferred from one rope to the other, and the grips on the cars are made double, so as to take hold of either rope as occasion requires. This method not only insures the uninterrupted operation of the road, but also provides for a careful inspection of either rope and the repairing of either whenever necessary. It allows the cables to be operated alternately for twenty-four hours, thereby providing time to make repairs to machinery or ropes. The change of ropes causes no interruption to travel.

The engine room, of which we present two views, one looking toward the street and the other toward the rear, is occupied in the portion next to the street with two Wright Automatic Cut-off Engines, which may be used either together or independently. Each engine is of 300 horse-power, the cylinders

and within a few inches of each other. One of these sections now operates the line along 10th avenue, and the other will in the near future operate cables passing through 125th street, from river to river. On the main shaft are four loosely mounted pinions, two at each section. Each pinion drives a train of gearing carrying a pair of drums, and as they are precisely alike in construction, a description of one will answer for all. Meshing with the pinion is a gear on a shaft, so mounted that it carries one of the driving drums upon its outer end. The second driving drum is carried by a shaft having a large gear wheel similar to the one on the first shaft. Between and meshing with these gears is a smaller one. Around each pair of drums a cable is wound.

An important variation from the construction usually found in machinery of this kind is here introduced. Generally the bearings of the drum shaft are placed one at each side of the drum. The advantage of placing both bearings at the same side of the drum, as in this case, is apparent. When the tension car, owing to the stretching of the rope, has reached the upper or farther end of the pit, the surplus length of rope can be easily

Fig. 2. The slack in the cable is taken up by weights on a differential lever at the upper or rear end of the tension pit. The two cables operated by the same section run through the trench upon independent pulleys at a distance of about 3 inches apart. The grip is formed with clutching jaws at each side of the lower end, so that either cable may be grasped to propel the car. By means of the double grip, the cable in use is bound to drop into the grooves of its own pulleys as the car passes on. A cross section of the trench is shown in Fig. 2.

The care of the ropes in the cable system is a very important item, and experience has proved that they should be examined at least once in twenty-four hours, to discover, if possible, any breaks which might otherwise cause the rope to "strand." For this purpose the pair of small vertical engines shown in the center of each section are provided to move the idle rope slowly. It is also very convenient often in repairing a rope to move it a very little without starting the main engines. Steam is supplied by four return tubular boilers of 150 horse-power each located in the rear of the engine room. The operating machinery was built by Messrs.

We simply wish to say that a project is on foot to hold a tariff convention somewhere in the South. That powerful paper, the Baltimore MANUFACTURERS' RECORD, which has done so much in spreading true knowledge about Southern resources, has suggested the idea, and we favor it, and present Atlanta as the best point to hold the convention.

Protection notions have marvellously spread in the South. The impetus given in late years to manufactures in the Southern States has stimulated the increase of opinion favorable to some sort of protection.

The Capitol is rather on the line of tariff for revenue only with incidental protection.

By all means let us have the tariff convention and talk over the matter, and let us have it in Atlanta.—Atlanta (Ga.) Capitol.

The Solid South.

We publish lengthy extracts this morning from the review made by the Baltimore MANUFACTURERS' RECORD in regard to the development of industrial enterprises in the South during the year 1885. It presents a most gratifying condition of affairs, and

bears the evidence of accuracy upon the part of the enterprising journal that publishes it.

The statement was made by a cotemporary a short time ago that the full significance of the great change which has taken place in the industrial life of the South since the war is scarcely comprehended by the Southern

ritory, in small and widely separated streams it may be, but the currents once turned this way will never be stayed or turned aside. The tide will grow larger and stronger every year, and the children of to-day will see the flood ere they reach man's estate.

The South is growing, and its prosperity

A Model Machinery Establishment.

The new works of J. S. Graham & Co., Rochester, N. Y., who are widely known as builders of a high grade of wood-working machinery, is a model establishment, com-

tion. The buildings are in the form of an "L," facing Lyell avenue and West street, running at a slight angle on the former. The Lyell avenue front is two stories high, and the "L" contains the offices, drawing room, etc., on the ground floor, and the pattern shop and loft on the second floor. The rest is one story in height, spanned by trusses of wood and iron, at intervals of eight feet, for the support of shafting and suspension railway. The front door on the right leads to the general office, which is a large commodious room, 22 feet long by 16 feet wide, and, like all other rooms, is 13½ feet high. Adjoining the general office is the private office, a cozy room 16 by 13 feet, handsomely furnished. At the rear of the office is found the drawing room, an apartment 24 by 12 feet, and provided with light by four large windows facing the north—an advantage appreciated by draftsmen. This room is furnished with a fire-proof vault of brick, 3½ feet square and 13½ feet high, for the reception and protection of drawings in case of fire. It is furnished with a case so arranged that any particular drawing of any of the numerous machines can be found at once. The room next the drawing room is the supply room, in which are kept all the general supplies for shop, such as files, new tools, etc.

Entering the machine shop from the office, the eye is greeted by a large room, 180 feet long, 45 feet wide and 13½ feet high, without any obstructions in the form of columns or posts, and whose walls and ceiling are all whitened. The mechanical observer will notice many pleasant features, which if not entirely new, are, to say the least, rare. The

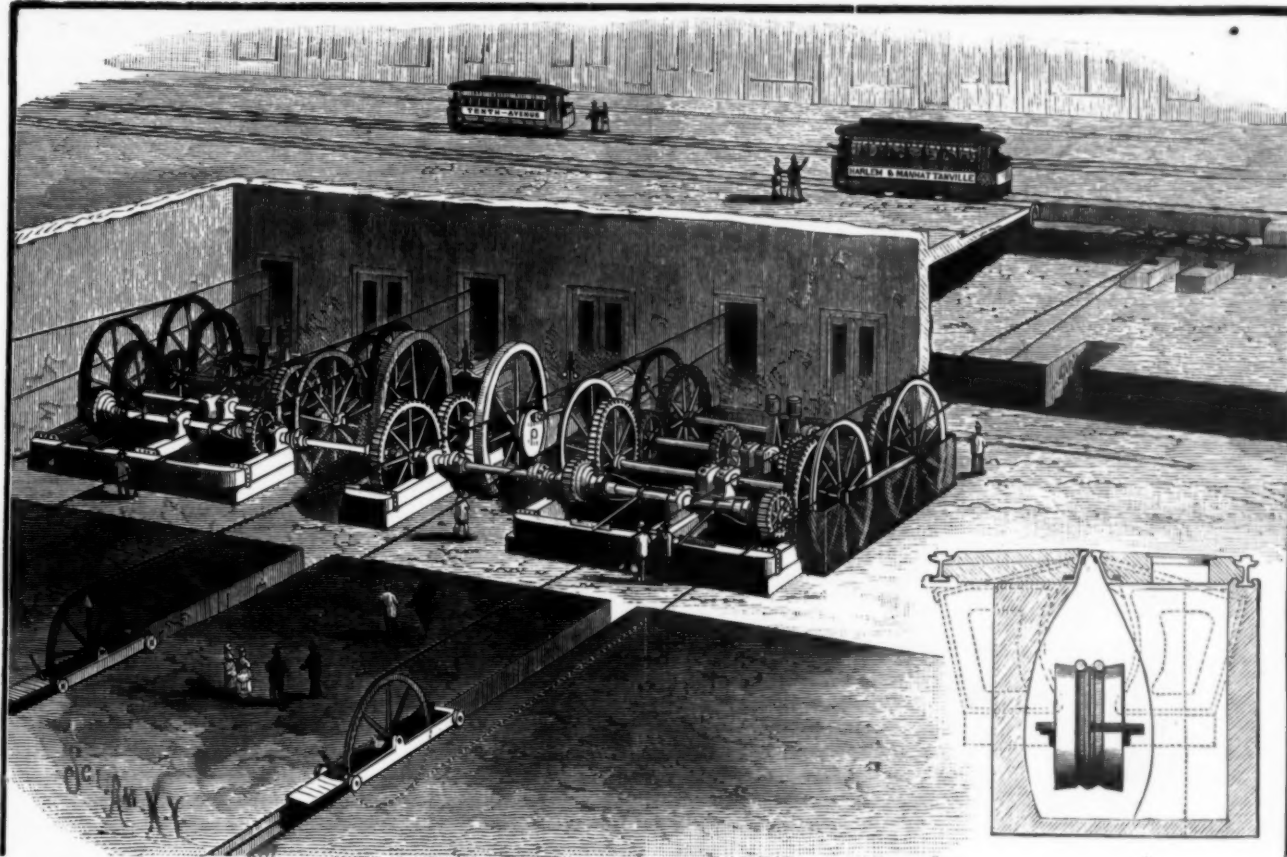


FIG. 2.—VIEW OF OPERATING MACHINERY.—LOOKING TOWARD THE STREET.

people themselves. This is true. In many respects the change is like that from an unsettled country to a settled one, and from an undeveloped country to a developed one.

The Charleston News and Courier, in speaking of this wonderful development, says the coal and iron ores of Virginia and Alabama, the marble quarries of Georgia, the gold mines of North Carolina and South Carolina, are not discoveries of to-day. Their existence has been known for generations, and yet their stores of inestimable wealth are only now being brought to light and utilized for the first time—years after the exhaustion of some of the mines in the wilds of California and the great Northwestern territories. Birmingham, Ala., already the rival of Pittsburgh, is an infant in days compared with Yankton and Omaha, and a score of other cities that might be named, which sprang into being along the buffalo trails in a country that was still a wilderness peopled with savages when the land upon which Birmingham is built was a wornout cotton field.

The work which is now in progress in the South, it is true, is such work as was completed in the North a generation ago, but the significant fact is that it is in progress. Whatever the causes that have kept the South back in the industrial race, the obstacles have been removed and the race has begun. It will not stop.

The West has had its day, the day of rapid, almost unnatural growth and development, and it will now be let to follow a like order of progress and development with the Eastern and Middle States, while the South goes to the front by reason of its greater opportunities as compared with those of other parts of the Union. There are more attractions for labor and capital in the South to-day than in any other part of the world, and both labor and capital are quick to recognize the field where they may be employed to best advantage. They are already pouring into our ter-

is growing with even more rapid pace. Its natural resources cannot longer lie idle in the presence of the demand for them, and its broad acres cannot remain unoccupied in view of the population which is pressing in on all sides in search of homes. What the West has been to the East for a quarter of a

plete in every part, and deserves a description.

Mr. John Kane, who planned this "plant," will be remembered as the author of a series of interesting articles contributed to the "Lumber World," and now published in

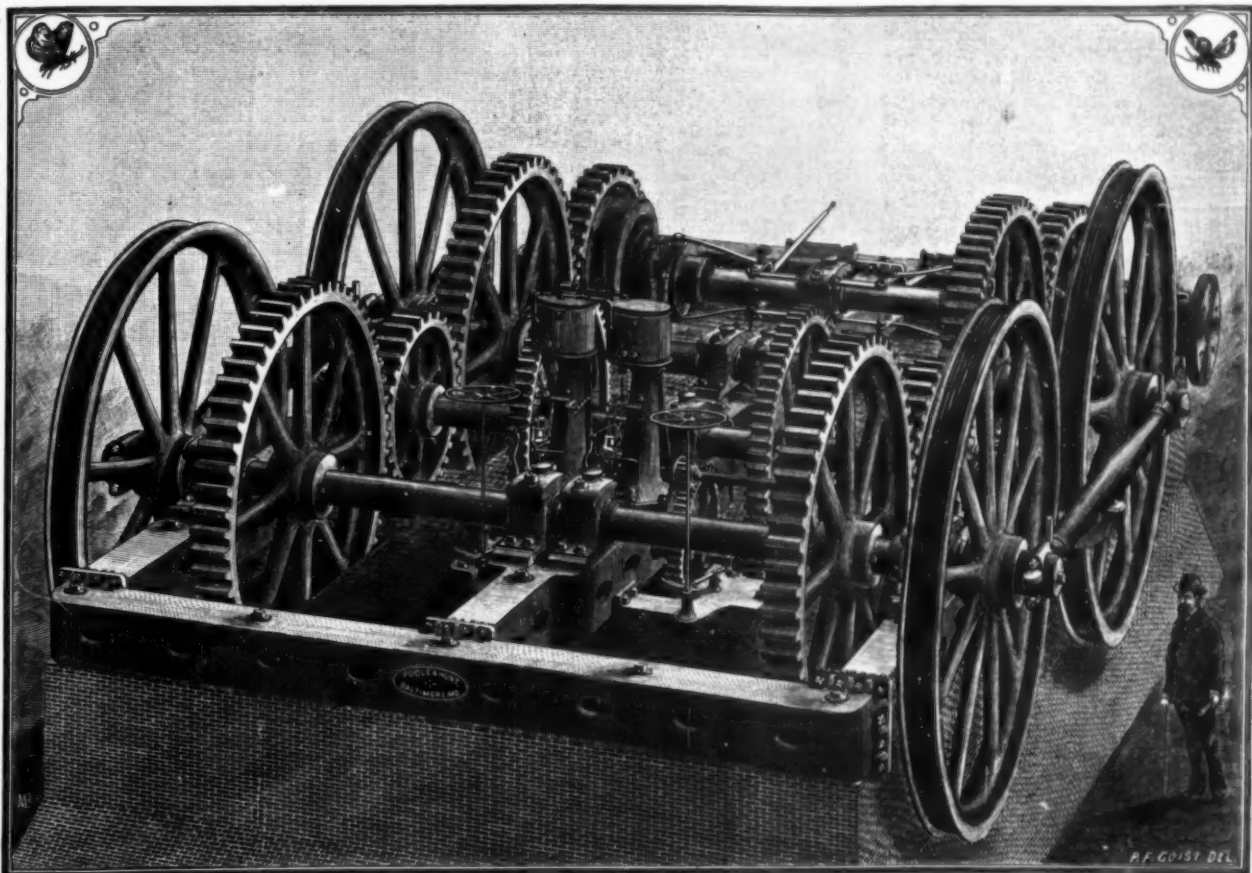


FIG. 3.—NEW YORK CITY CABLE RAILWAY.—ENLARGED VIEW OF ONE SECTION.

century, the South is now to the North, East, and West alike, and having every advantage of soil and climate that lavish nature can bestow upon a country, it is destined to outstrip both its older and younger competitors, and to win the first place in spite of them all.—Columbus (Ga.) Enquirer-Sun.

book form, entitled "Sawdust and Shavings," very interesting and instructive, and written in a humorous strain.

The buildings are more ornate than usual for factory purposes. They are built in a substantial manner of brick, on stone founda-

floor is made for durability; it is the proper distance from the ground to be on a level with the ordinary truck; the timber supporting the floor are 12 by 16 inches, resting on cut stone capped piers 12 feet from centers. On these timbers rest the joists, 16 inches

deep and 12 inches from centers, and floor proper is composed of 2-inch plank, dressed to a thickness and spiked to the joist. On top of the plank is $1\frac{1}{4}$ inch matched hard maple, making a very solid floor 3 inches thick. The window casings are 9 by 5 feet, with brick piers, 3 feet wide, between each window, each pier provided with a ventilat-

railway for the testing of all machines on actual work before shipment.

At the north end of the machine shop are located the blacksmith shop and casting cleaning room, both 32 by 33 feet. These departments are fitted with every convenience for the rapid performance of the various kinds of work, and are furnished with

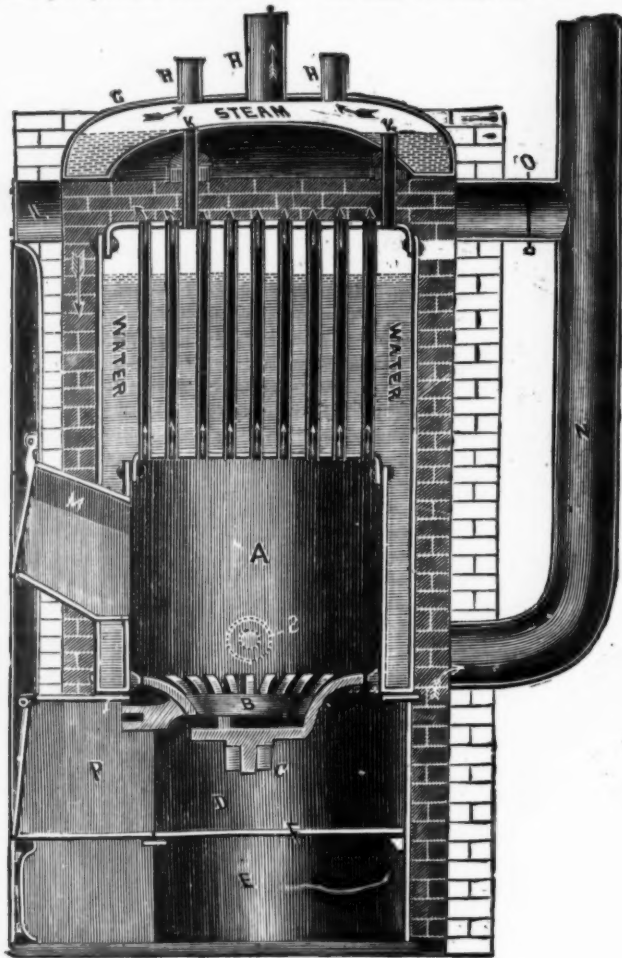


FIG. 1.

ing flue, 8 by 8 inches, affording ample ventilation. All the lathes and milling machines are placed on one side of the shop; drill presses, etc., in the center, and vise benches on the opposite side—a disposition giving the most room and convenience. The planers rest on large stone piers, thereby preventing vibration. On the lathe side of the shop is a narrow bench the whole length behind the lathes for the reception of lathe tools and other small tools, obviating the use of a tool-board on each lathe. Underneath the bench are located steam pipes for heating. On the opposite side of the shop is a continuous vice bench, 120 feet long, built in the most approved manner, the bench legs, gas burners, etc., etc., being made from new and special patterns. Underneath the vise bench is the steam pipe for this side of the shop. In the center of the shop will be found the tool room. It is 16 feet long by 12 feet wide wainscoted to about $4\frac{1}{2}$ feet high, and has a paling of neat wire work 13 inches high. In this room are kept all the general and portable tools of the shop, such as arbors, reamers, taps, dies, drills, dogs, templates, etc., none of which can be had without depositing a brass check, with which each workman is supplied, and which is returned in as good condition as when taken away. The line shafting is $2\frac{1}{2}$ inches in diameter, driven from the center, fitted with finished couplings of the flange pattern, and revolves in hangers that are adjustable in every direction, and have detachable bottoms; all pulleys are wrought rim split pulleys. A large overhead railway of ample capacity extends the whole length of the building, and a six-ton machine can be taken from one end of the shop to the other and loaded on a truck in an incredibly short time by three men. This is found to be a great time and labor-saving convenience in the handling and moving of machines. A full equipment of counter-shafting is located near the

everything pertaining to comfort for the workmen. All large castings are easily handled by the overhead railway from the rear end to any part of the building. On the east side of the cleaning room is a shed, 100 feet by 32 feet, in which are stored all the extra castings, lumber, oils, paints, etc., and it is also fitted with an overhead railway for the handling of heavy objects. The engine room is in the basement under the center of the building, and is 50 feet by 45 feet, finished like the rest of the building and floored with asphaltum cement. Two large washing troughs of unique design are provided with hot and cold water for the employees. Hooks, etc., are also provided for their clothing. In an annex adjoining the engine room are located the boiler, coal bins, etc. A large cistern receives all the rain water, which is used for steaming purposes, and also to prevent a stoppage in case of the city mains being broken or the supply stopped. About the offices on the Lyell avenue front is located the pattern shop, 38 by 32 feet, and 13 feet high. This is fitted with the necessary machinery and appliances for a complete pattern shop. The pattern loft adjoins the pattern shop, and is separated by a brick wall, with tin lined doors, and this department is fitted with shelving, so arranged that any one of the large number of patterns can be found easily and quickly, as they are all classified for that purpose. The members of the firm are J. S. Graham and John Kane. The establishment is believed to be a model in every respect, and has greatly increased the facilities for turning out work.

ADVERTISERS wishing to reach the manufacturers of all classes, mining companies, steel, iron and hardware dealers of the entire South, cannot find a better medium than the **BALTIMORE MANUFACTURERS' RECORD**.

Modern Warming and Ventilation with Low Pressure Steam Heating.

Few subjects deserve more thoughtful and careful consideration than the question of "warming and ventilation" as applied to our homes, public buildings, places of business, etc. Many persons entirely ignore ventilation in the construction of buildings, and never connect the cause of so much sickness and suffering with poor and imperfect ventilation.

Ventilation is in providing proper escapes for vitiated air, with conditions compelling its exit, and in place of that displaced, supplying needed quantities of pure air.

With such the inspiration is a pleasure, and there is luxury of good feeling, which close, unpleasant atmospheric conditions will not admit of. Heating has much to do with

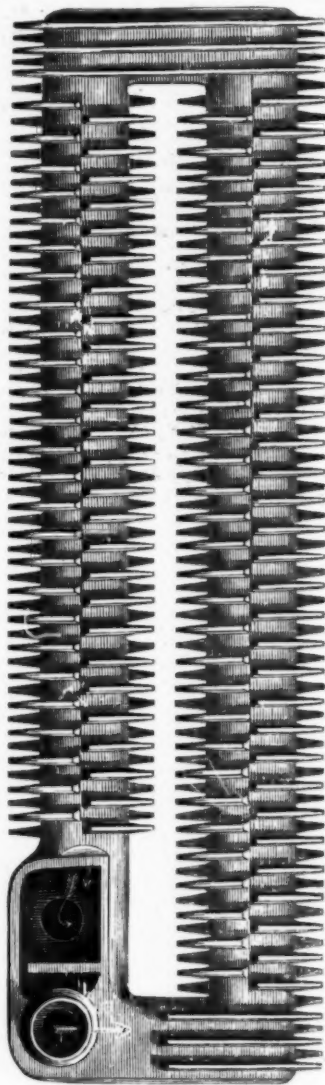


FIG. 2.

perfect ventilation, and the two are so closely allied that they should be considered together.

The method used for heating is often the cause of poor ventilation.

Stoves and furnaces are productive of poisonous gases, which, though imperceptible to many of us, are bound to escape and have their deadly effect on those who inhale this atmosphere.

The vitality and good health of many a person has suffered serious impairment by inhaling the gasses escaping from stoves and furnaces.

Next to the importance of a healthy ventilation in house-warming is that of comfort.

Fire-places, while they possess the merit of a very fair ventilation and a cheery appearance, literally "roast your face and freeze your back," and, like stoves, soil the furniture and require a great deal of care, and when left unattended, not unfrequently are the cause of a conflagration. In steam-heating apparatus the most important improvements have been made.

Better results are now obtained with forty per cent. less iron, and better engineering

knowledge now used in adjustments gives practical and more uniform results on any size of building than were formerly obtainable. Instead of using high-pressure steam, carrying conditions of danger with it, a new method has been devised by H. E. Light, (who is authority on steam heating,) by which low pressure is utilized so perfectly that the largest buildings require but five pounds pressure, while for dwellings two to three pounds of steam is ample. In point of convenience the improvements have been so complete that instead of having skilled help to attend the apparatus, the ordinary domestic help of the house serves every purpose. One of the largest jobs done by The Eureka Steam Heating Co., of Rochester, is in Milwaukee (3d ward school building), and consists of three twenty-two horse-power boilers, and about 6,000 feet of radiation, and is run by a woman, who directs all the details throughout the building.

In order to obtain the best results from steam heating an experienced and capable steam-heating engineer should be consulted.

The most perfect system of ventilation is obtained by indirect radiation, set with low-pressure steam generating apparatus.

With this method of the incoming air passing over the radiators, we have the nearest approach to a summery, pleasant heat, with an entire absence of gas or other e-apses from the combustion of fuel. This method is best for residences and assembly rooms. When not practical to set indirect radiation, then "direct" may be set, which answers a good purpose for stores, factories, and buildings where a given heat needs to be maintained for protection only, or where from frequent opening of outside doors or passages air may be changed to meet required conditions.

Direct radiation may be set in many buildings to advantage with indirect, both constructions contributing to the heat of the room, while the indirect, with its pleasant air supply, gives the needed relief to the atmosphere. This latter method is desirable where the ventilation is limited.

The accompanying cuts represent The Eureka Steam Heating Co's Low-Pressure Steam Generator and Direct and Indirect Radiators. These are the result of years of study and experience, and they are so complete and so well constructed in all parts that it would seem difficult to improve on them. The radiators are noted for their beauty of design and finish.

The diameter of the tubes are large and give a prompt and easy circulation.

The formation of the base, peculiar to this radiator, is such that water does not remain in it. Owing to the compactness and strength of this radiation, it is especially adapted to use on steamboats and other places where economy of room and strength in construction are important.

The manufacturers claim the following advantages for their boilers, or steam generators:

"I. The entire surfaces, inside and out, are fire surfaces.

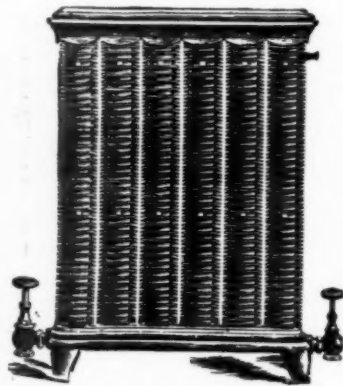


FIG. 3.

II. The exterior surfaces, instead of being exposed to the cold air, which chills the same, acting against the fire surfaces, are turned to the fire.

III. From thirty-three to fifty per cent. is added to the steam generating surfaces, and with the same fire thirty-three to fifty per cent. more of steam is made, or the same steam with twenty-five to thirty-five per cent. less fuel.

IV. The steam taken from the supplemental steam chamber is dryer, stronger steam, free from priming, and more active in circulation.

V. The convenience of the clear space on the steam chamber for leading out the supply pipes is superior to any vertical construction before the public.

VI. The smoke pipe opening out at the side is easily accessible at any time for cleaning, and is removed without extra labor or the removal of other work.

VII. The arrangement of the cast iron base, with the grate conveniences, is superior to that of any other boiler.

VIII. While it is of the most thorough construction, it can be supplied to the public at as low prices as any good work.

IX. The expense of setting is very light compared with most other boilers.

All boilers are made of the best C. H. No. 1, flange, and fire-box irons, and the tubes of the best make. All boilers are fitted entire before leaving the shop, and of a strength of one hundred and fifty pounds hydrostatic pressure to the square inch.

They especially call the attention of all to their patent fire grate, which is a shake and dump grate, or is easily cleaned at any time without losing the fire. With this convenience fire may be carried from fall to spring, if wished.

The following is an explanation of sectional view of the Low Pressure Steam Generator, front to rear:

(A) Fire-box. (B) Fire grate; a shake and dump grate, perfectly cleaned of waste quickly, without losing the fire. (C) Grate bar supporting fire grate. (D) Space between fire and ash grate. (E) Ash pit be-



neath ash grate. (F) Ash grate in two parts. (G) Steam dome connected to top of boiler proper with three nipples, & &, which extend to height of concave surface, holding water to that height, thus preventing the possibility of superheating. By this arrangement water is carried much higher in the boiler proper, than is practical with ordinary vertical boilers, and greater length of life is given it. (H) (H) (H) Steam feed pipes. (I) Clearer box, through which tubes are cleaned with steam, and more quickly than most other boilers. (M) Feed mouth for fuel. (N) Smoke flue with direct and indirect connections. (O) Damper set in direct flue. (S) Diagram of open flange on outside, to which return drip-pipes are connected. (T) Apex of an inverted V, closing at a point just below where the diameter of smoke flue would come below bottom edge of dome. The extremes of the A extend downward and around the sides of boiler, terminating just above the flanges S. The work entire is set on a cast iron base plate (seen at bottom). In setting the brick work

a space three inches in the clear is left around the boiler proper and circular part of base, except the A, which is made by crowding bricks in on end against the boiler.

The A constructed as described, in combination with damper O, when closed compels the products of combustion, when passed through the tubes, to turn over and down that point of the shell in front of the A, when, on reaching its extremes at S, they pass to the rear and out through the indirect base flue of smoke pipe N. This is the usual operation, and by it the fire surfaces are largely increased, and with the more thorough application of the heat there is much less fuel required to make the same steam than with most boilers. The damper in direct flue may be opened or any needed convenience.

The manufacturers, Rochester, N. Y., will take pleasure in answering any inquiries relative to their apparatus.

A Hand-Power Press.

The Cone Press, manufactured by the Cone Press Co., Baltimore, is a very powerful machine intended for hand power. It is used for baling cotton, rags, hay, straw, husks, hemp, flax, hops, hides, oakum, broom corn, hair, moss, tobacco, wool, rubber, bagasse, sponge, metals, spanish grass, paper, manure, and numerous other articles where a reduction of bulk would insure a corresponding reduction in cost of freight.

It does not require skilled labor, but it is claimed that two ordinary laborers can pack from 50 to 60 bales of hay per day, and other articles in proportion.

Circulars, with further description, will be sent on application to the manufacturers.

Building up the Waste Places.

No student of history but will be surprised at the comparative facility with which nations, states and communities recover from the effects of destructive and desolating wars. The rule holds good with reference to our own country. Few wars on the earth have resulted in a more stupendous annihilation of property and property interests, than the colossal convulsion through which we have passed, less than a quarter of a century ago. Besides the sacrifice of hundreds of thousands of her best blood, the Southern States, at Lee's surrender, saw destroyed forever four thousand millions of property, invested in slaves, besides the gigantic depreciation of her landed values, as a consequence of the wiping out of her former system of labor.

At the conclusion of the war, the South was literally, as well as metaphorically, in ruins. But a view of our section to-day is like one of the dissolving views of the stereopticon. A change—so gradual as to be almost imperceptible to ourselves—has crept over the scene. Prosperity and hope reign where desolation and despair ruled twenty years ago. The terrible past, with all its horrors, is remembered alone as a frightful dream. This is no fanciful picture, or the idle assertion of an optimist. It can be proven by figures, which are stubborn and conclusive things. A statement made in this morning's dispatches, and taken from that reliable Southern publication, the Baltimore MANUFACTURERS' RECORD, covers the case. From this it appears that during the year 1885 alone there were invested in new companies and manufacturing enterprises, including the rebuilding of those destroyed, over \$65,000,000. Within the last five years over ten thousand miles of railway have been built, which, including the improvement of old roads, foot up over \$500,000,000. At the

close of 1885, the total cost and equipment of Southern railways aggregated \$1,250,000,000, against \$679,800,000 in 1880. Again, in the last five years, the property in the South has increased to the enormous but gratifying extent of \$1,000,000,000. That is, in half a decade, we have increased our taxable wealth by one-quarter of the whole amount in slave property we lost during the war. These figures speak for themselves. We are fast getting out of the woods. Our genial climate, rich soil, inexhaustible resources and numberless chances for profitable investment are beginning to attract the rusty millions of capital locked away in the vaults of the great money centres of our own country and Europe. We are already feeling the revivifying influence of the influx of capital now being planted in our midst with benefit to us and profit to itself. We are beginning to manufacture, and the time may come when New England may wish she had let us alone, and avoided the chance of building up a rival.—Austin (Texas) Statesman.

Southern Industrial Growth.

Twenty years ago the representative men of the South, the men of brawn and intellect, returned home from the bloodiest war of modern times. They came back from this war only to find ruin and desolation on every hand; their labor system revolutionized, and nothing but the bare, naked land to give them subsistence or hope for the future. It was certainly a discouraging prospect for any people. But they went to work with an energy and will rarely equalled, and to-day no country in the world, the circumstances all considered, can boast of more rapid and enduring progress than they have made—even within the past few years.

It must be remembered it was the policy of Southern economists to discourage manufacturing, and at the close of the civil war the South had nothing but lands upon which to recuperate her lost fortunes. This policy had to be revolutionized; the new generation had to be taught in another school of economy. What has been the result of this training in the new school is told in the last issue of the Baltimore MANUFACTURERS' RECORD, a paper devoted to the material prosperity and industrial growth of the South.

While the recital of this progress ought to be gratifying to every Southern man, the part Alabama has taken towards bringing about these results ought to be particularly gratifying to Alabamians. In 1885 she invested \$7,841,000 in industrial enterprises, being second in the list of Southern States making the largest investments in manufacturing enterprises. The indications now are that more money will be invested in the State during the present year in railroad building and manufacturing than ever before in its history.—Birmingham (Ala.) Age.

THE MANUFACTURERS' RECORD, of Baltimore, is one of the most valuable papers in the country, and the best authority we know on industrial affairs of the South.—Sea Island News, Beaufort, S. C.

If you wish to keep posted on the progress of the South, read the MANUFACTURERS' RECORD. Price \$3.00 a year.

Let it Alone.

The increase in the value of the exports of refined sugar last year over the preceding year was \$10,669,274, the aggregate value being in 1885 \$16,071,767, against \$5,402,493 in 1884. Granulated sugar is the principal article of export, and in the refining of these sugars American refiners are admittedly superior to their English rivals, both in skill and machinery. Our despatches from Washington announce that an attempt will be made to revive the Spanish treaty this session. The rapid increase in the exports of sugar, after making due allowance for any advantages American refiners have from rebates, indicates that the cost of refined sugar here to the consumers can not be greatly, if any, in excess of the price abroad. Referring to this, the Boston Commercial Bulletin recently said:

"The free-traders will have a hard nut to crack in the fact that in the Boston and New York markets, where, of course, the refined product is sold without any rebate on the taxed raw material, the market price for refined sugar has ranged below the current values in the London market, where the raw material is free."

The price of sugar has steadily declined during the last fifteen years. The report of the Bureau of Statistics for 1885, just issued, shows that the annual average export price in currency since 1871 was as follows: 1871, 13.2 cents per pound; 1872, 12.6; 1873, 11.6; 1874, 10.4; 1875, 10.8; 1876, 10.7; 1877, 11.6; 1878, 10.2; 1879, 8.5; 1880, 9; 1881, 9.2; 1882, 9.7; 1883, 9.2; 1884, 7.1, and 6.4 cents per pound in 1885. This is the truth about the sugar question. Yet there are those who want to present Spain with about \$40,000,000 annually which we derive from customs duties on sugar, and thereby lessen the revenues and probably increase the cost of sugar to the consumers. If the consumers of American sugar know when they are well off they will practice Professor Sumner's doctrine in relation to the sugar question, and let it alone.—Philadelphia Press.

MANAGERS of mills, factories, furnaces, mines, etc., and parties starting manufacturing enterprises, and needing machinery or supplies of any kind, will find it profitable to consult the advertising columns of the MANUFACTURERS' RECORD. Its pages contain names of the best houses in the country among manufacturers of and dealers in machinery and mill supplies.

BEAUDRY'S UPRIGHT CUSHIONED Power Hammer,
BY FAR THE BEST!
Blow accurate, powerful and elastic.
Will increase the profits of any shop.
70 Keller St., BOSTON, MASS.
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The BEST and CONSEQUENTLY the CHEAPEST OFFICE DESK IN THE WORLD.

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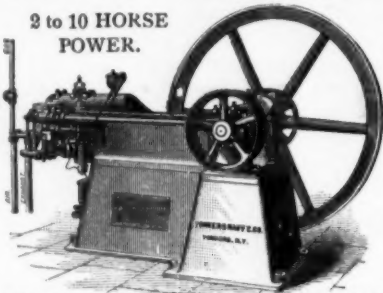
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Simple.
Durable.
Effective.



No Boiler.
No Coal.
No Ashes to
be Removed.
No Chimney.
No Engineer.
No Smoke.
No Smell.

No Slide Valve to Get Out of Order. Does Not Hazard Insurance.
No Small Parts to Clog Up. Is Noiseless in Running.
Requires no Matches to Ignite the Gas. Can be Run with Any Kind of Gas.
It is the only Engine that can be run equally as well with Gasoline Gas or Carburetted Air, as with regular
fixed gas. Speed can be adjusted while running from 80 to 200 revolutions per minute.

YONKERS MFG. CO. SOLE PROPRIETOR AND BUILDER,
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Economy of Fuel, with increased capacity of Steam
Power. Like the Siemens Process of Making
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the fire. Will burn all kinds of waste fuel without a
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Ragle & Phenix Mfg. Company, Columbus, Ga.
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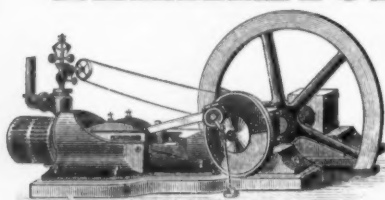


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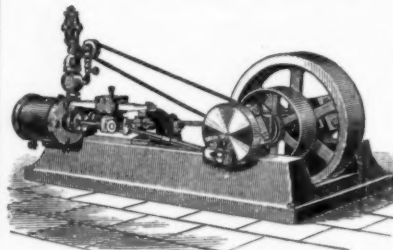
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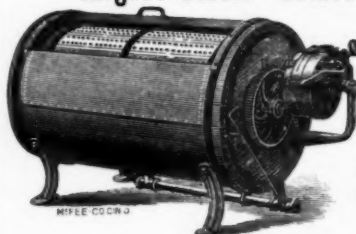
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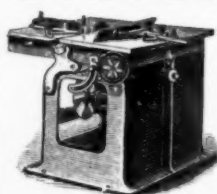
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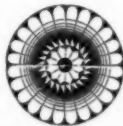
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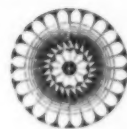
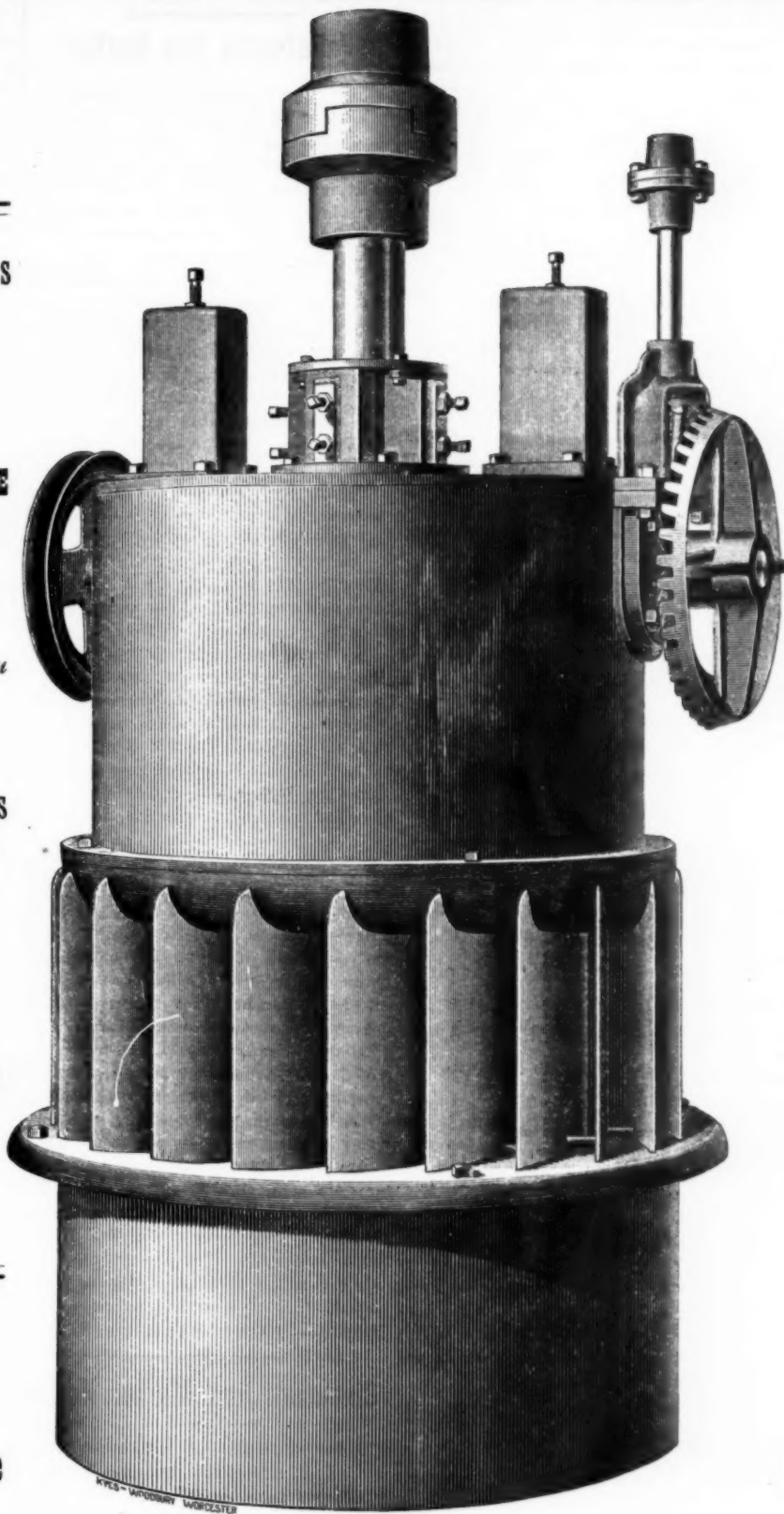
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them many times, and all
brought to the standard of
excellence which has been
set by the makers and de-
manded by their customers.



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	Diam. in inches.	Head on Wheels.	Horse Power.	Date of Setting.
Albion Paper Company.....	39	25	265	1878
Albion Paper Company.....	24	25	115	1883
Albion Paper Company.....	45	27	445	1880
Albion Paper Company.....	30	27	300	1883
Chemical Paper Company.....	4-30	23	620	1880
Chemical Paper Company.....	5-18	23	275	1880
Chemical Paper Company.....	33	23	185	1880
Chemical Paper Company.....	42	23	305	1880
Chemical Paper Company.....	2-48	23	800	1880
Connecticut River Pulp Company.....	36	18	155	1881
Crocker Paper Company.....	39	25	300	1883
Farr Alpaca Company.....	48	19	300	1878
Franklin Paper Company.....	39	20	215	1883
Geo. R. Dickinson Paper Company.....	2-45	19	520	1883

	Diam. in inches.	Head on Wheels.	Horse Power.	Date of Setting.
Geo. R. Dickinson Paper Company.....	36	19	170	1883
Holyoke Water Power Company.....	39	19	115	1882
Holyoke Warp Company.....	48	11	130	1879
Massachusetts Screw Company.....	27	19	90	1882
Merrick Thread Company.....	48	12	150	1880
Newton Paper Company.....	48	21	350	1880
Nonotuck Paper Company.....	48	20	570	1881
Nonotuck Paper Company.....	27	20	175	1881
Riverside Paper Company.....	48	20	325	1880
Syms & Dudley Paper Company.....	45	29	495	1881
Syms & Dudley Paper Company.....	24	20	140	1881
Springfield Blanket Company.....	36	18	135	1877
The Beebe & Holbrook Paper Co.....	24	19	75	1884

	Diam. in inches.	Head on Wheels.	Horse Power.	Date of Setting.
The Massachusetts Paper Company.....	39	19	197	1883
Union Paper Company.....	45	20	285	1882
Union Paper Company.....	30	20	125	1882
Valley Paper Company.....	42	27	390	1882
Wauregan Paper Company.....	42	18	210	1879
Wauregan Paper Company.....	33	18	130	1882
Whiting Paper Company.....	27	18	85	1882
Whiting Paper Company.....	16	15	30	1880
Winona Paper Company.....	48	28	540	1880
Winona Paper Company.....	24	28	135	1880

Increase since..... 9,797
Total..... 10,576

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Literary Notices.

"LETTERS FROM HELL." New York: Funk & Wagnalls. \$1.00.

This book is an English rendering of a work which appeared in Denmark eighteen years ago, and was followed by an English translation by the publishers of the present version. This early English edition has long since been out of print, but the recent appearance of the work in Germany has aroused an almost unparalleled interest, and a demand which exhausted twelve editions in one year. The present English translation is made from this German version, but in a somewhat modified form.

We take the following extracts from a review in the New Orleans Times-Democrat:

"In the 'Letters from Hell' there is no effort made to picture physical suffering. The terror, the horror, the unspeakable yet vividly described pain, are purely mental, but the agony is none the less real. The book is simply appalling. * * * The book itself stands without a parallel. It is safe to pronounce it, not only in general conception, but in the execution of its finest details, the most remarkable work of this era. Except that its vehicle is prose, it stands in poetic grandeur side by side, if not a step in advance of, Milton's Paradise Lost and Dante's Inferno. * * * The over-powering and masterful grandeur of the conception, and the vividness and realism with which the details are worked out are, we repeat it, truly appalling. While the tortures portrayed are those from which an intelligent reader of to-day would most sensitively shrink, they are also those which must fix themselves upon every reflective mind with unerring force and persistency, as a most probable and reasonable outcome of a wasted, careless, or sinful life that had not sought its exculpation at the foot of the Cross."

"GOOD HOUSEKEEPING," published by Clark W. Bryan & Co., Holyoke, Mass., is the best magazine of its kind in existence; in fact, it is the only one of its kind; it is unique. Every number presents an inviting and appetizing "Bill of Fare" in the shape of a great variety of articles by the best writers on matters pertaining to the household, from the parlor to the kitchen. Cooking, eating, drinking, sleeping, manners, domestic sanitation, household decoration,—these and kindred topics are treated of from all standpoints.

A FREE COPY of either Babyland for babies, our Little Men and Women for youngest readers, or the Pansy for boys and girls, will be sent to any one desiring some periodical for the little ones, who will write for it, mentioning this paper. Address D. Lothrop & Co., Boston. A sample copy of Wide Awake will be sent on receipt of five 2-cent stamps. Interesting announcements and full premium-list will be sent, if desired.

ALDEN'S CYCLOPEDIA OF UNIVERSAL LITERATURE.—This work is the outcome of many years of planning and preparation. It will be an almost indispensable work of reference for every library, large or small, a trustworthy guide to what is most worth knowing of the literature of all ages and all nations. Occupying a dozen or more volumes, and yet issued at a price so low as to be within the reach of all, a familiarity with its contents will constitute a liberal education to a degree that can be claimed for few other works in existence. Dr. Lossing, the eminent historian and author, says of it: "I am strongly impressed with the great intrinsic value of the work as a popular educator in a high department of learning. The plan is admirable. Combining as it does a personal knowledge of an author with specimens of his or her best literary productions, gives it an inestimable power for good among the people." The work is being published in parts of 160 pages each,

paper covers, at the price of 15 cents; also in very handsome cloth-bound volumes, gilt tops, 480 pages, for 60 cents. The parts can be exchanged for bound volumes, at any time. Four parts are now ready; also the first bound volume; volume two will be issued in a few days. The publisher's 132-page illustrated catalogue of standard books may be had for 4 cents, or condensed 16-page catalogue, free. John B. Alden, publisher, New York.

MESSRS. CASSELL & CO. (Limited), have commenced the publication of a "Rainbow" series of original novels, by popular American and foreign authors. They will be published in large 12 mo. volumes of about 200 pages each, and will be well-printed on good paper, and bound in illuminated paper cover. The price will be twenty-five cents a volume. The first volume of the series has already been issued. Its title is "A Crimson Stain." It is well written, possesses more than usual interest, and is full of dramatic incidents. It has the merit of being a clean book, and unlike the majority of novels issued now-a-days, is entirely free from anything in any way objectionable either in statement or suggestion.

CORRESPONDENCE relating to the manufacturing, mining, lumbering and all other material interests of the Southern States is solicited. Reaching so many capitalists in all parts of the United States seeking profitable investment in the South, the MANUFACTURERS' RECORD offers an excellent chance for the people in that section to place the advantages of each locality before those likely to be interested. We will take great pleasure at all times in telling what has already been accomplished in the South, and showing up the opportunities of doing still more.

THE MARKETS.

OFFICE MANUFACTURERS' RECORD, BALTIMORE, Feb. 10, 1886.

The past week has been somewhat quiet, owing to the extreme cold weather, and consequent closing of navigation. The market remains both firm and unchanged at annexed figures:

Ref. Bar Iron, 1 to 6x3/4 to 1.....	1.85	2.10
" " " 1 to 4x3/4 to 1.....	1.85	2.10
" " " 3/4 to 1, round and square.....	1.85	2.10
Hoop Iron, 1 1/2 wide and upward.....	2 1/2	2 3/4
Band Iron, from 1 1/2 to 6 in. wide.....	2.30	2 1/2
Horseshoe Iron.....	2 1/2	2 3/4
Norway Nail Rods.....	5	5 1/2
Black Diamond Cast Steel.....	8	9
Machinery Steel.....	3	3 1/2
Spring Steel.....	3	3 1/2
Common Horse Nails.....	10	14
Railroad Spikes, 5 1/2x9-16.....	2 1/2	3
Horse Shoes, 3/4 keg.....	3	70
Mule Shoes, ".....	4	70
Steel Boiler Plate.....	3 1/4	3 3/4
Iron Boiler Plate.....	2 1/4	4
Boiler Tubes.....	35	off list

There has been no change in the condition of the pig iron market since our last report, and we repeat quotations:

Baltimore Charcoal Wheel Iron (all Baltimore ore).....	25	00@26	00
Virginia C. B. Charcoal Wheel Iron.....	25	00@26	00
Anthracite, No. 1.....	18	00@19	00
" " " 2.....	16	00@17	00
" " " 3.....	15	00@16	00
" " " Mottled and White.....	13	00@14	00
Old Iron Rails.....	21	00@22	00
No. 1 Wrought Scrap.....	18	00@19	00
Old Car Wheels.....	16	00@16	50

HARDWARE.

The market remains quiet, with a fair demand, which is satisfactory for the season. There are no changes in the prices to report. The orders from the far South have been

large, and the indications are this season's trade will be better than for several years past.

The demand for nails is fair. The prices remain as last quoted—\$2.35@2.40.

Philadelphia Iron Market.

PHILADELPHIA, February 9, 1886.

A falling off in demand is to be reported for the last six days. This has been due partly to the unfavorable weather, and partly to the feeling among a good many buyers, that there was not much to be gained by buying right away, and not much to be lost by waiting. This is, however, a matter of opinion. The pig iron brokers and makers are quite willing that buyers should entertain these views, and that they should make no effort to contract for forward delivery. The only thing to be said in regard to prices is, that they are very firm all around. Furnace men refuse to shade 25 cents per ton to make large sales, because they say that they will get 25 or 50 cents a ton more than they are now asking by waiting. The buyers do not think this as probable, and are therefore waiting for another week or two to pass. Forge is quoted and selling at \$16.50 to \$17, although a fair article has been sold within a day or two at \$16. No. 2 foundry ranges as usual at from \$17 to \$18, according to quality, and No. 1 from \$18 to \$20, which represents the extreme limits. Some makers of muck bars are getting \$30, and others are selling what they make at \$29 to \$29.50. When the merchant bar manufacturers met a short time ago they filled up with confidence, and the supply has not yet run out. A fair amount of business is coming in, but not enough to justify much crowding. Some makers are getting \$1.90 in small lots, but there are others glad to sell at \$1.75 to \$1.80. Medium iron is selling at \$1.60 to \$1.65, and common a little less. Our nail makers are selling a good many nails in a small way for the local trade, but the outside trade is shut out on account of unfavorable weather. The Eastern nail makers meet here to-morrow, Wednesday, but nothing can be said as to the outlook of the nail trade, until we hear from Pittsburgh. The Bessemer steel company, limited, met last week and agreed that they would not increase the 1,000,000 ton allotment. Brokers on both sides of the Atlantic are scouring around after old rails. Quotations may be given at \$22 to \$23; scrap \$18 to \$19. The wrought pipe men are looking for a big spring demand. The merchant steel manufacturers have been satisfied with the amount of business done.

Cincinnati Iron Market Report

Specially reported by E. L. HARPER & Co.

CINCINNATI, February 8, 1886.

The market is more firm than a week ago. This is caused from the continued strike in the coke district. Some few furnaces have been compelled to blow out, and more are banking up, being unable to get coke. The Southern furnaces, on account of advance in freight rates, are, in a measure, cut off from the North and Northwest, and are now endeavoring to place their product East. This will enable the furnaces north of the Ohio river to again place their iron in larger blocks, and in such territory as they rightfully belong. We quote prices current cash on cars or wharf here:

FOUNDRY.		Cash.
Hanging Rock Charcoal, No. 1.....	19	50@19 50
" " " 2.....	18	50@19 00
Southern Charcoal " 1.....	18	50@19 50
" " " 2.....	17	50@18 50
Strong Neutral Coke, " 1.....	17	50@18 00
" " " 2.....	17	00@17 50
American Scotch, " 1.....	17	50@18 00
GREY FORGE.		
Neutral Coke.....	15	00@15 50
Cold Short.....	14	50@15 00
CAR WHEEL AND MALLEABLE.		
Hanging Rock, strictly cold blast.....	25	00@26 00
Hanging Rock, strictly warm blast.....	21	00@21 50
"Craberry," N. Carolina Warm Blast.....	23	00@23 75
Amherst and Virginia Warm Blast.....	21	50@22 00
Lake Superior Charcoal, all grades.....	23	00@24 00

Louisville Iron Market.

Specially reported by W. B. BELKNAP & Co., Nails, Wire, Iron, Hardware, Carriage and Wagon Goods.

LOUISVILLE, KY., Feb. 8, 1886.

Again the polar wave has swept down on us, not only with extreme cold, but with a great deal of snow, which has resulted in the suspension of navigation again upon the rivers and the blockading of trains on the railroads. Mails in some instances have been delayed two or three days, and the efforts of whole communities have been rather to keep fires going than to prosecute any other work.

List of Patents

The following Patents were granted to citizens of the Southern States, bearing date Feb. 2, 1886. Reported expressly for this paper by Louis Bagger & Co., Mechanical Experts and Solicitors of Patents, Washington, D. C.

Anderson, G. K., Memphis, Tenn. Recording speech.....	335,171
Beidler, H. M., Texarkana, Ark. Galvanic belt.....	335,417
Bellows, D. A., Mulberry, Ga. Millstone-bush.....	335,418
Campbell, A. C., Nashville, Tenn. Ore-separator.....	335,338
Campbell, Parker, Denton, Tex. Mail bag or pouch.....	335,494
Carrico, T. W., San Antonio, Tex. Construction of privy vaults and apparatus for use therewith.....	335,177
Cooper, Richard, Greenville, Tex. Cotton scraper.....	335,507
Dickson, S. C., Greenville, S. C. Cotton thinner.....	335,180
Douglass, A. H., Memphis, Tenn. Metallic wrapping for cotton, &c.....	335,216
Haubman, L. F., New Orleans, La. Defecator for cane-juice.....	335,358
Hege, C. A., Salem, N. C. Cotton-press.....	335,194
Henke, Henry, Houston, Tex. Funnel for forcing molasses, &c.....	335,458
Hetherington, J. S., Dallas, Tex. Power-stand.....	335,128
Hopkins, C. B., Louisville, Ky. Till-lock.....	335,456
Jarnagin, J. S., Mossy Creek, Tenn. Machine for filing prescriptions.....	335,457
Jenkins, C. A., New Berne, N. C. Adjustable bedstead.....	335,360
Jories, A. J., Middleburg, Va. Planter.....	335,595
Lloyd, C. W., Salisbury, Md. Fruit-crate.....	335,369
Lovick, Geo., Temple, Tex. Seed-planter.....	335,370
Pluck, J. H., Waresville, Tex. Tire-tightener.....	335,535
Putman, J. H., Daingerfield, Tex. Plow.....	335,537
Rettberg, E. F. and C. C. Ellis, San Antonio, Tex. Wrench.....	335,481
Serdinko, John, Braunfels, Tex. Wind-engine.....	335,388
Thompson, C. E., Baltimore, Md. Lubricating compound.....	335,546
Tinsby, C. L. and W. P. Rose, Baltimore, Md. Breaching attachment for thills.....	335,401
Velliner, B. H., Norfolk, Va. Machine for cleaning peanuts.....	335,409
Waljen, W. H. and J. H. Keller, Baltimore, Md. Refrigerator.....	335,327
Whitaker, D. W., Durham, N. C. Printer's galley.....	335,494
Whitlock, J. H., Bremond, Tex. Sash-holder.....	335,268
Wiley, P. W., Raleigh, N. C. Machine for attaching labels to packages.....	335,166

PATENT LAW.

TRADE MARK LAW.

PAUL BAKEWELL,

Attorney at Law,

79 & 80 Turner Building, 304 8th St., ST. LOUIS, MO.

REFERENCES:

Branch, Crookes & Co., }
Liggett & Myers Tobacco Co., } St. Louis.
Excelsior Manufacturing Co., }

C. D. MOODY,

Patent Solicitor,

AND EXPERT IN

—Patent Causes,—

No. 710 Olive Street, ST. LOUIS, MO.

WM. H. BABCOCK,

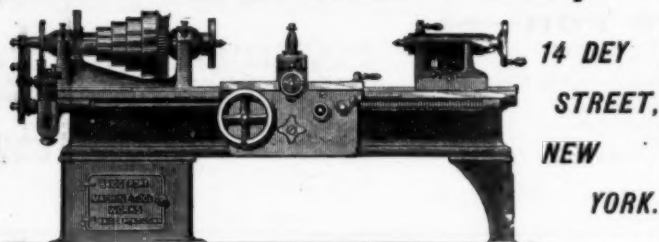
Attorney at Law, Patents,

513 Seventh St., WASHINGTON, D. C.

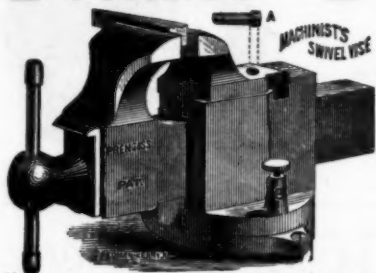
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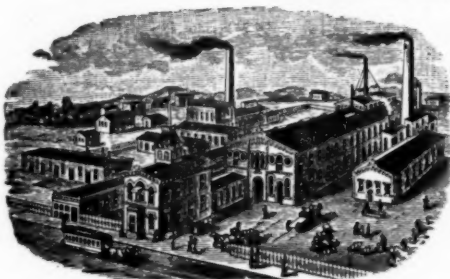
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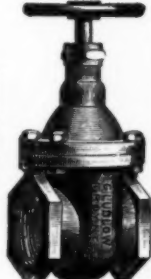
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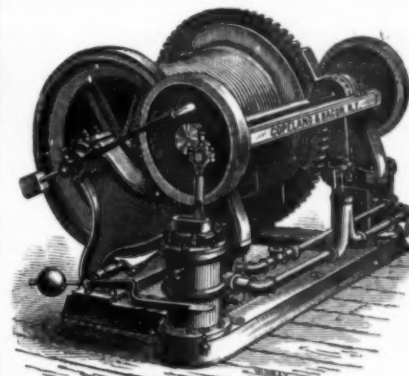
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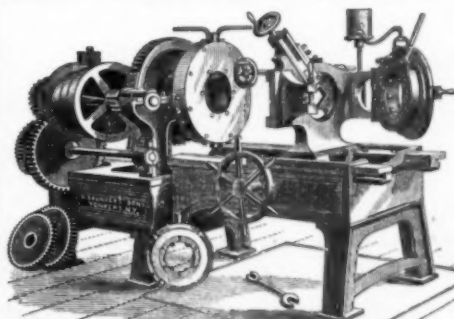
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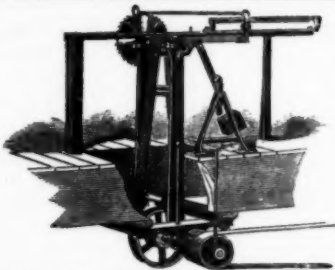
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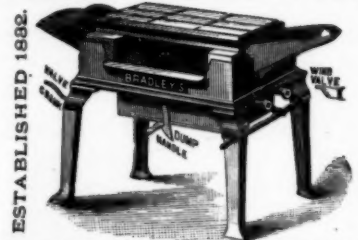
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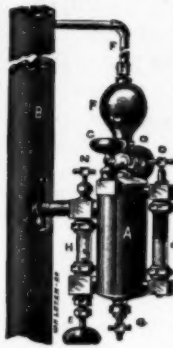
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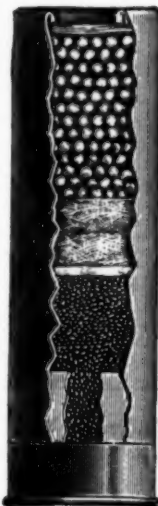
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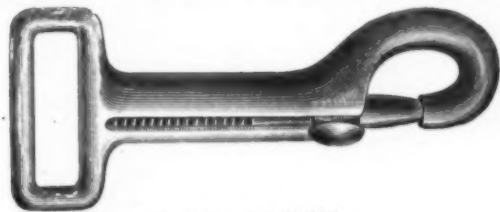
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Parties advertising in this column must have replies sent to their own address, and not to care of Manufacturers' Record, unless stamps are sent for forwarding replies. Advertisements sent not in accordance with this requirement will not be inserted.

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and all kinds of Plate Work,

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Estimates Furnished upon Application

Get the Best at First.

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That is a pretty strong letter, but it is only a sample of letters received by the manufacturers of this wheel. Among the recent shipment of wheels have been two—one a 34-inch and one of 60-inch—to a Georgia cotton mill. Two Hercules wheels are being put in at Natick Cotton Mill, and one at the Arctic Mill of B. B. & R. Knight near Providence. This will make eleven wheels furnished to this well-known firm, one of the most prominent in the manufacturing line in New England. Hercules wheels are sold in England, Ireland and Scotland, and on the Continent, a cable order having been received only a few days ago for one to go to France. The manufacturers say: "The Hercules gives the most power for its size and the highest average percentage from full to one-half gate of any wheel ever made." Their advice to all users of water wheels is to "get the best at first." If you are interested in water wheels, if you want a new wheel or a larger wheel, or a better wheel than you are using, write to the Holyoke Machine Co., Worcester, Mass., for catalogue No. 3.



Detroit Patent Brush Co.

436 GUOIN ST, Detroit, Mich.

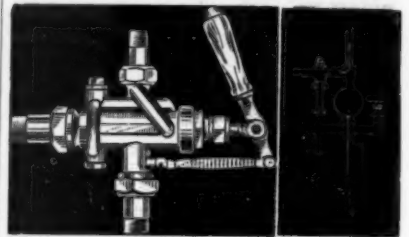
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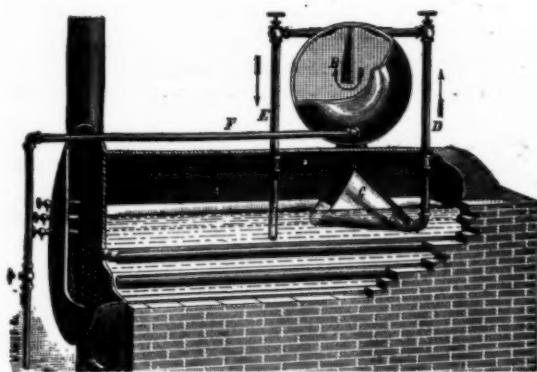
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THE HOTCHKISS MECHANICAL BOILER CLEANER

Removes from Steam Boilers, Lime, Oil, Magnesia, and all other impurities of Boiler Water, and prevents Scaling, Foaming and Burning; but the object of this advertisement is to inform you that some

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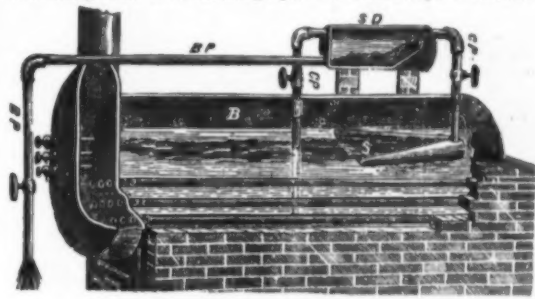
in the South and West are offering Boiler Cleaners for sale as shown in cut on right-hand side below which is an old style of my cleaner. The cut on left side shows my improved style.

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BOILERS
CLEAN."

If you will send me your name I will send you an 88 page book, free of charge, giving useful information to Steam Users and Engineers. 65,000 already sent out and more to follow. The title of book is "HOW TO KEEP BOILERS CLEAN."

Compare this cut with one on left, and see if identical; the only difference being in shape of Skimmer and Drum.

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The best way to cure your steam boilers of incrustation and sedimentary deposit is to keep out of the boiler that which causes incrustation and sediment.

The chief ingredients causing sedimentary deposits and incrustation are organic matter, carbonate of lime, sulphate of lime, carbonate of magnesia, sulphate of iron, and in salt water common salt.

The WARNER PURIFIER AND HEATER is the only machine which precipitates all impurities held in suspension, heats the water to the boiling point under full boiler pressure, separates and precipitates the mineral salts held in solution before the water reaches the boiler, and then injects the water thus purified into the boiler boiling hot. It is an automatic machine, entirely outside of the boiler, requiring absolutely no attention from the engineer except to blow off the accumulation of deposit from the bottom of the machine which acts as a mud-drum. All this is accomplished without the use of chemicals, by a purely mechanical process, regulated by the principles of natural philosophy.

No more "shutting down" of work to clean boilers—the machine does it all every day without interfering with the work, and by removing scale and preventing its formation, and heating the water to the boiling point saves a large percentage of fuel.

The WARNER HEATER AND PURIFIER COMPANY is now ready to furnish these machines on demand at very reasonable figures.

WASHINGTON, D. C., May 23, 1885.

This is to certify that I have made a careful examination of "Warner's Combined Purifier and Heater of Feed Water" in practical operation at the "Harris House" and "Post Building," in this city, and do not hesitate to pronounce it the best machine for the purpose ever invented. By its use the water goes into the boiler free from all impurities and heated to the boiling point under full boiler pressure, and as the result of the injection of pure water, the boiler is freed from scale and kept clean, while a large saving is made in fuel by the removal of the scale and heating the water to the boiling point before it enters the boiler. By the use of this machine the necessity of "shutting down" in order to blow out and clean the boiler is wholly obviated, as the impurities are all collected in the bottom of the machine, which can be blown out as many times a day as the engineer thinks proper without interfering with the workings of the boiler. I confidently commend this machine to all persons who own or use steam boilers, and am satisfied that its use will prolong the life of the boiler and make a handsome saving in the use of fuel.

(Signed) JOHN H. WILKERSON,

Inspector of Steam Boilers for District of Columbia, 220 7th Street, S. E.

"HARRIS HOUSE," COR. PENNSYLVANIA AVENUE AND E STREET, N. W.

WASHINGTON, D. C., June 23, 1885.

This is to certify that one of "Warner's Purifiers and Heaters of Feed Water" has been in use on one of the boilers of the Harris House, in this city, for three months, and has proved a perfect success. The boiler upon which the machine was placed was at the time covered with a heavy scale composed of animal and vegetable matter, lime, &c., which, by the use of this machine, has been entirely removed, the boiler being now as clean as when it came from the boiler-maker. This has been entirely accomplished, without the use of chemicals, by the injection of pure water through the "Purifier and Heater." This machine injects the water into the boiler heated to the boiling point under full boiler pressure, and by this means, together with the removal of the scale, results in a large saving of fuel. It is also invaluable in the purification of the water for laundry purposes. The machine is self-acting, and prevents the necessity of "shutting down" in order to blow out the boiler, as the impurities are all concentrated in the bottom of the machine, and can be blown out through the machine as often during the day as the engineer may deem advisable without interfering with the working of the boiler. I am convinced that its use will prolong the life of all boilers upon which it may be placed, save a large percentage of fuel, decrease the danger of explosion, purify the water for all purposes, and give general satisfaction. I confidently commend it to all hotels using steam and to owners of steam boilers generally as a much needed improvement that will do the work claimed for it thoroughly.

(Signed) JOHN H. HARRIS, Proprietor of Harris House, Washington, D. C.

WASHINGTON "POST" BUILDING, WASHINGTON, D. C., June 23, 1885.
This is to certify that one of "Warner's Purifiers and Heaters of Feed Water" was placed upon the boiler of the Post Building about 60 days ago as a test. At that time the boiler was covered with a heavy scale of animal and vegetable matter, lime, &c., which it was impossible to prevent. By the use of this Purifier and Heater, which injects the water into the boiler free from all impurities and heated to the boiling point, the scale has been removed and the consumption of coal reduced. The machine works itself and is invaluable as a purifier of water to all branches of business requiring pure water, such as hotels, laundries, &c., and a much needed adjunct to all steam boilers, prolonging their life, decreasing the danger of explosion and effecting a large reduction in the consumption of fuel. I confidently commend Warner's Purifier and Heater to all owners of steam boilers, being confident that their interests will be subserved by its use.

(Signed) J. FRANK MCGUIRE, Superintendent and Engineer Post Building.

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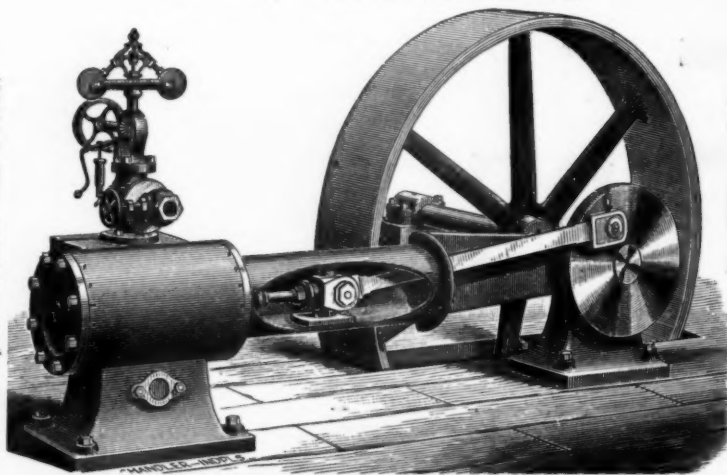
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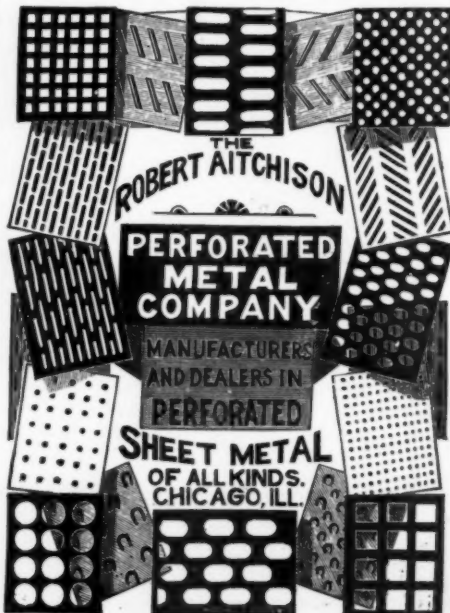
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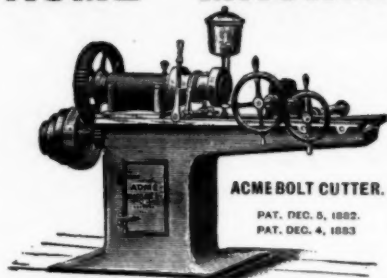
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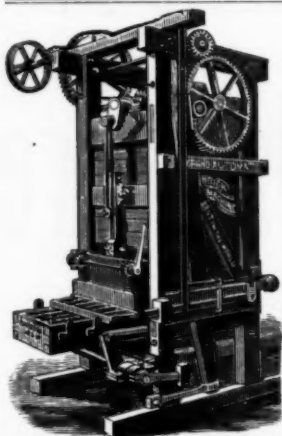


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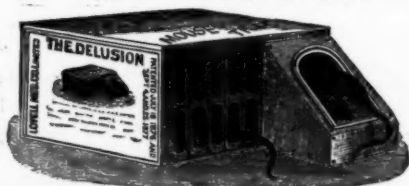
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He's in cage, somehow or other,
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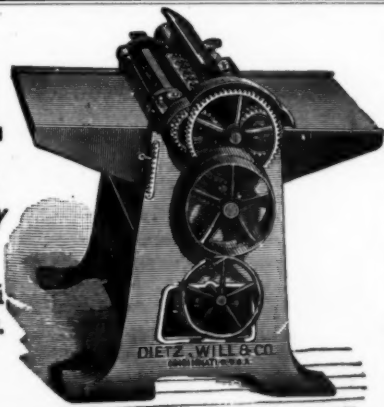
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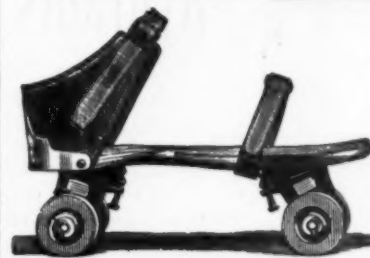
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Fig. 133.
Improved Steam Jacket Kettle
PLAIN OR ENAMELED.

SIZES.
20 Gallons.
35 "
70 "
100 "



Fig. 134.
Double Jacket Steam Kettle.

SIZES.
1 Gallons.
6 "
10 "
15 "
25 "
30 "
50 "
60 "
80 "
125 "



Fig. 136.
Iron Double-bottom Steam Kettle.
WITHOUT JOINTS.

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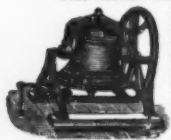
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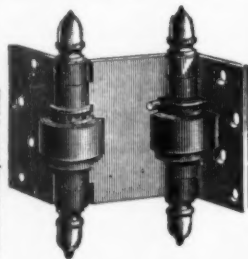
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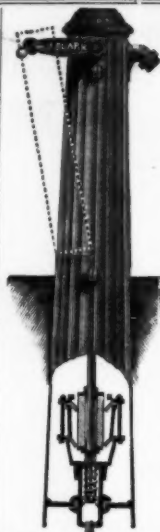
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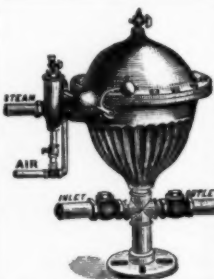
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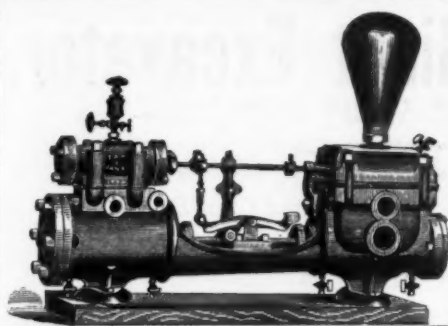
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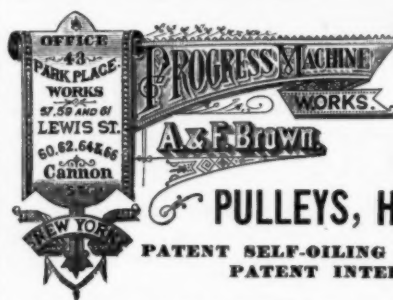


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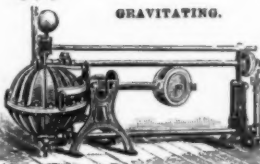
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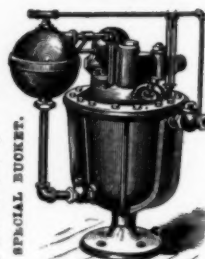


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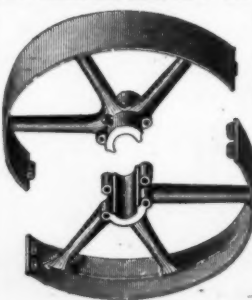
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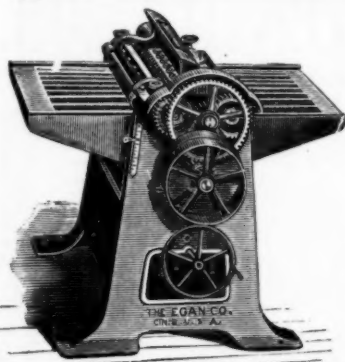
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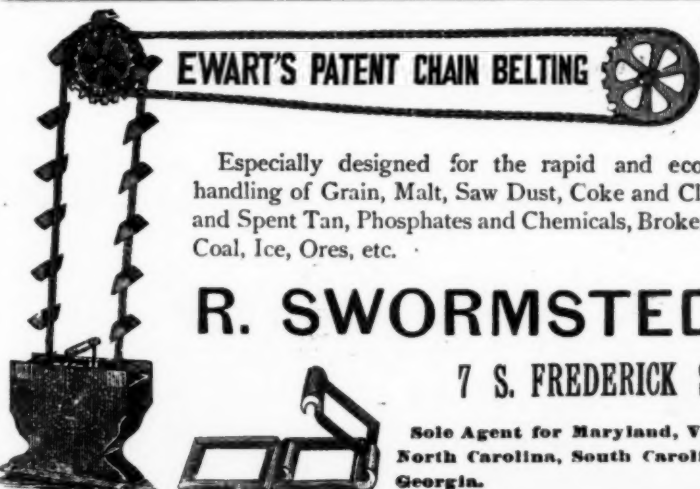
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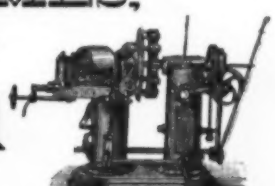
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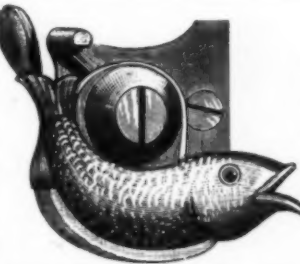


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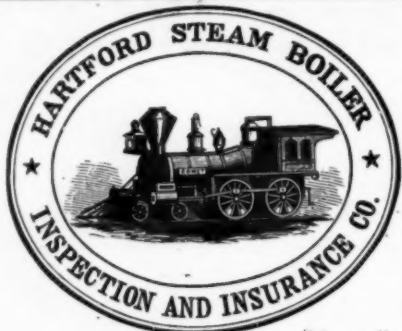
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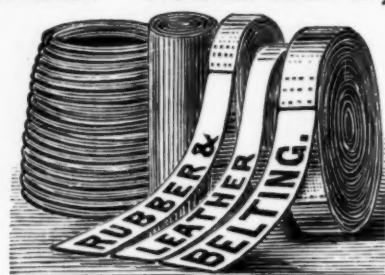
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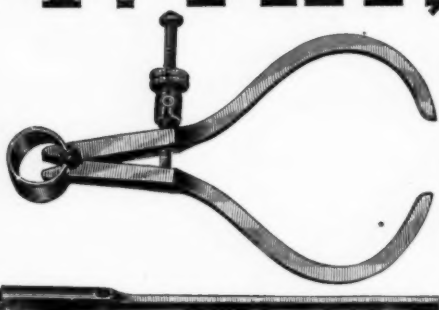
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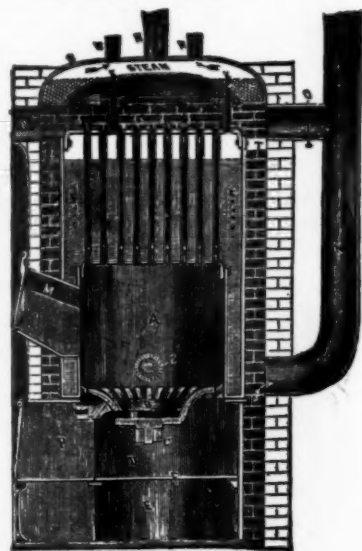
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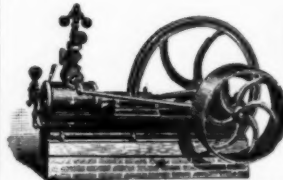
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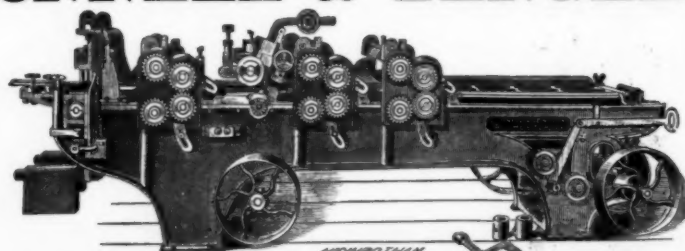


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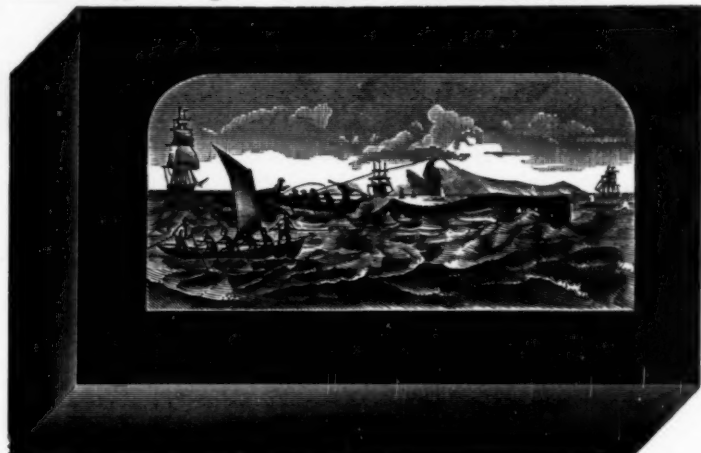
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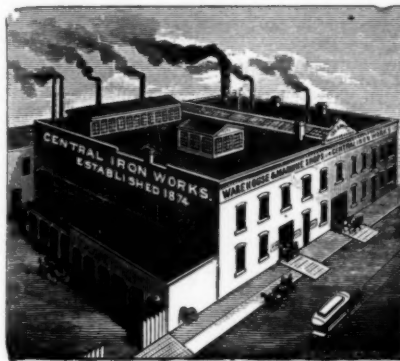
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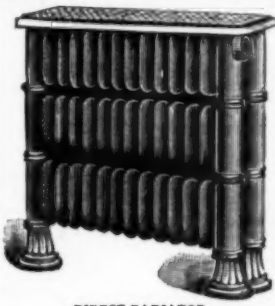
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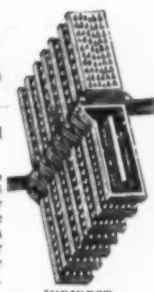
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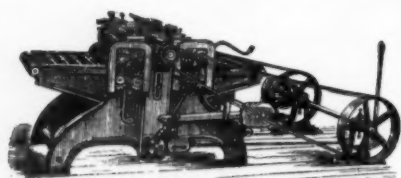
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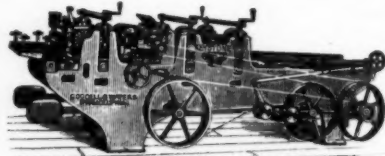
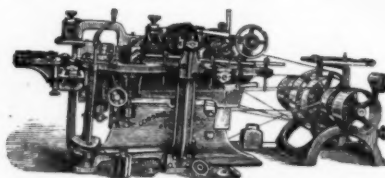
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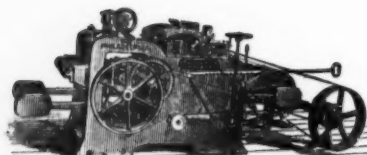


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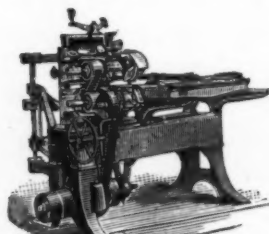
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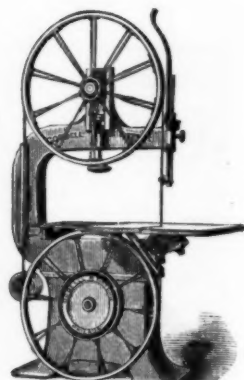


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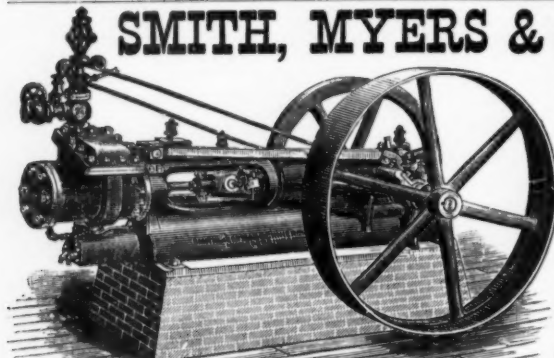
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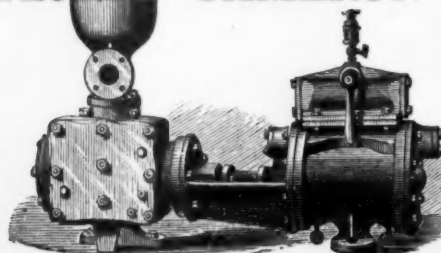
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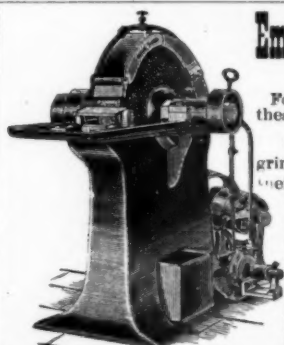
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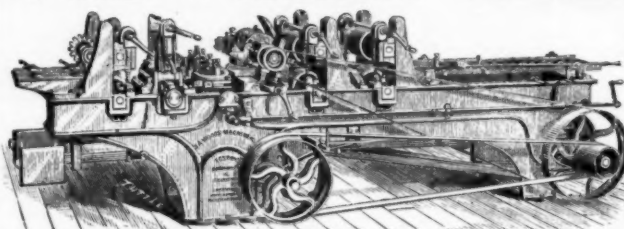
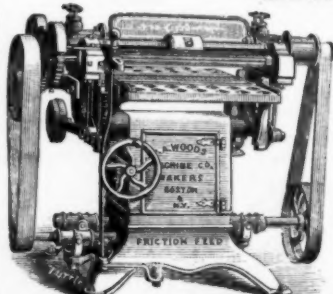
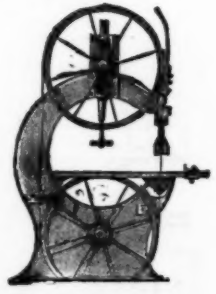
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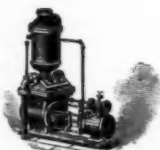
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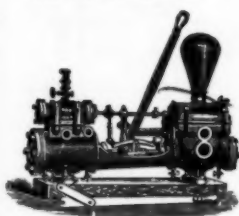
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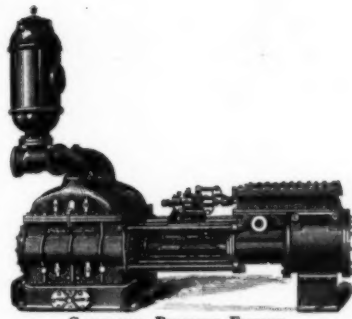


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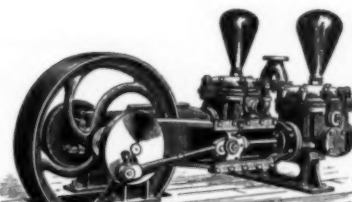


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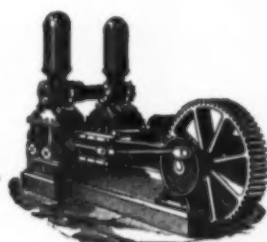
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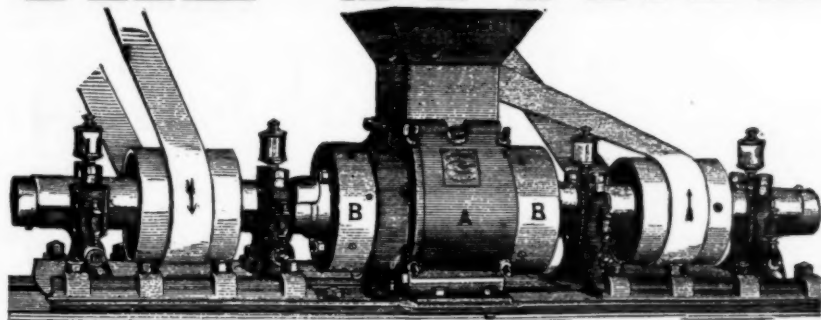
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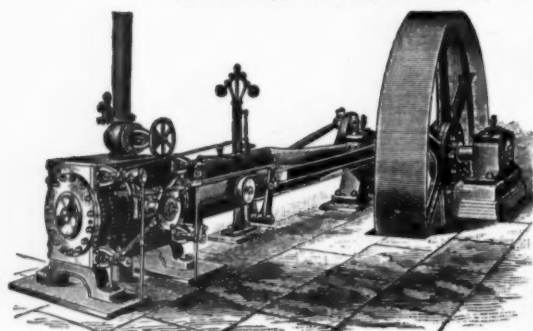
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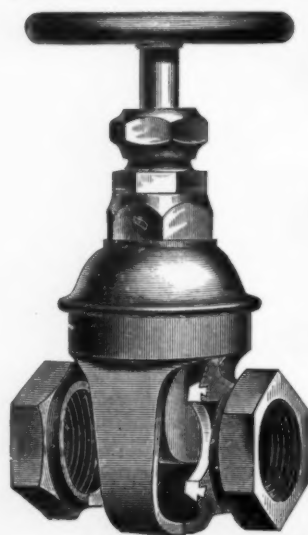
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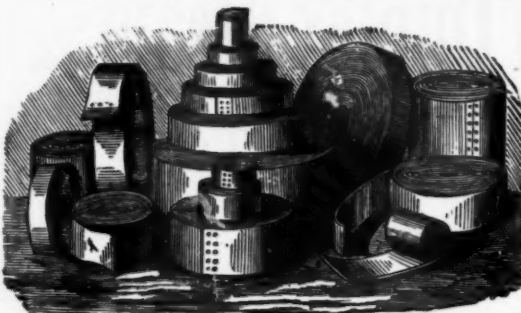
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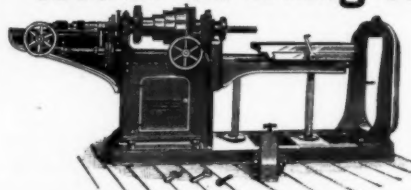
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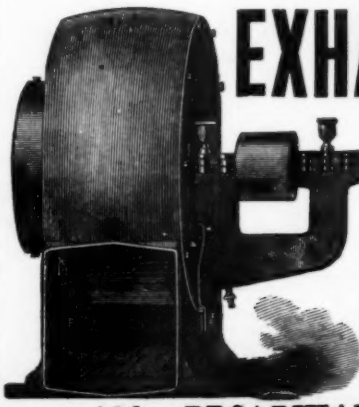
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